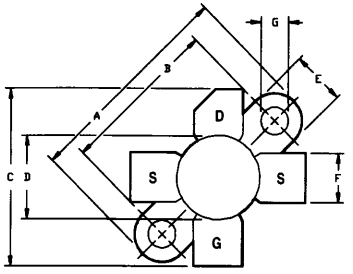
RF MOSFET Power Transistor, 40W, 28V
2 - 175 MHz

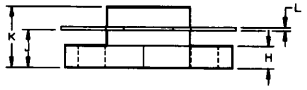
DU2840S

V2.00

Features

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





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

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

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_{DS}=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, ΔV_{GS}=1.0 V, 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}=40.0 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=28.0 V, I_{DQ}=200 mA, P_{OUT}=40.0 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=200 mA, P_{OUT}=40.0 W, F=175 MHz

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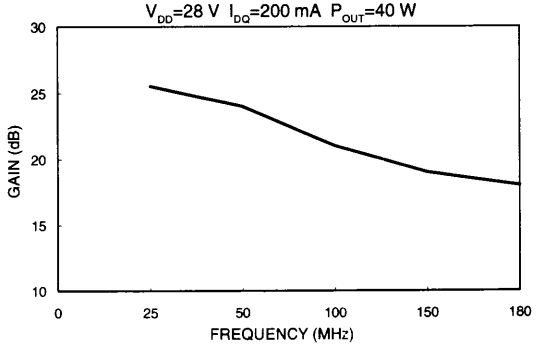
Typical Broadband Performance Curves

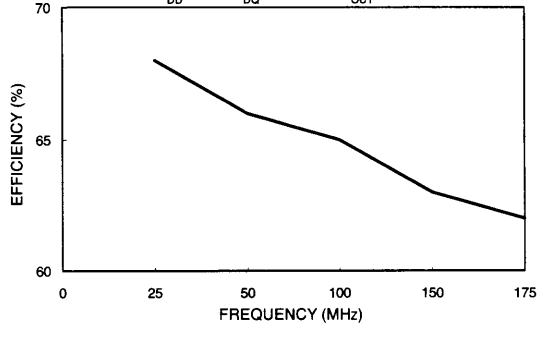
GAIN vs FREQUENCY

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



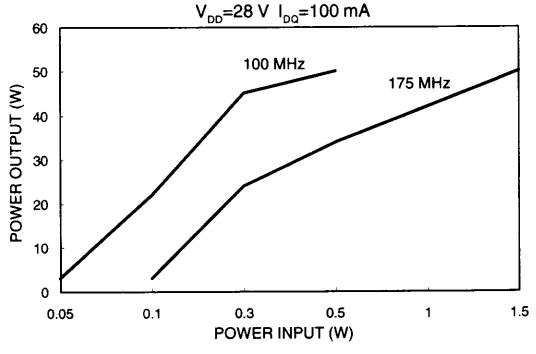
EFFICIENCY vs FREQUENCY

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



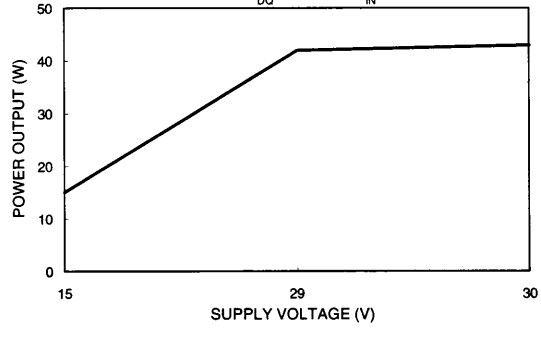
POWER OUTPUT vs POWER INPUT

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



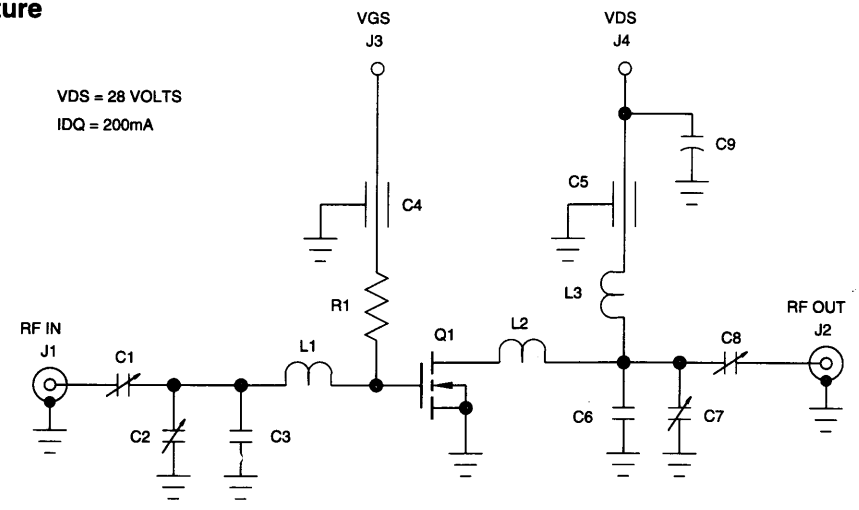
Typical Device Impedance

Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	12.0 - j 6.8	6.5 - j 1.5
50	10.0 - j 6.5	6.0 - j 1.8
100	6.0 - j 5.5	5.5 - j 1.8
200	1.1 - j 3.0	3.5 - j 1.8

V_{DD}=28 V, I_{DQ}=200 mA, P_{OUT}=40 Watts

Z_{IN} is the series equivalent input impedance of the device from gate to source.
Z_{LOAD} is the series equivalent load impedance as measured from drain to ground.

RF Test Fixture



PARTS LIST

C1,C7,C8	TRIMMER CAPACITOR 4-40pF
C2	TRIMMER CAPACITOR 9-180pF
C3,C6	CAPACITOR 50pF
C4,C5	FEEDTHROUGH CAPACITOR 0.004uF
C9	ELECTROLYTIC CAPACITOR 50uF 50 VOLT
L1	NO. 12 AWG COPPER WIRE X 1.25"
L2	NO. 12 AWG COPPER WIRE X 1.50"
L3	8 TURNS OF NO. 22 AWG ENAMEL WIRE ON '0.25", CLOSE WOUND
R1	RESISTOR 100K OHMS
Q1	DU2840S
BOARD	FR4 0.062"

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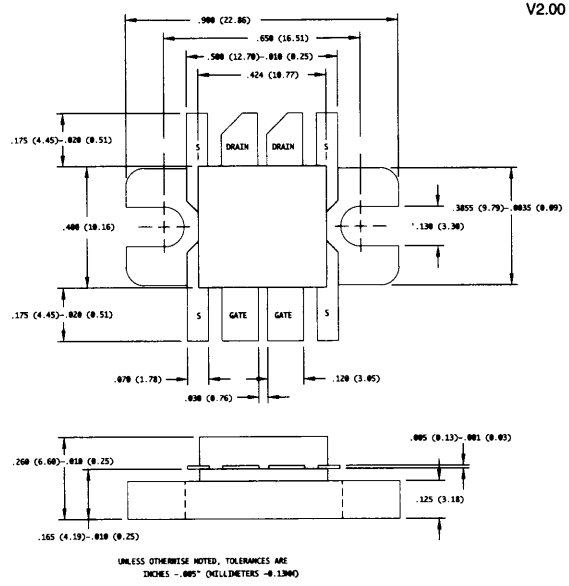
RF MOSFET Power Transistor, 40W, 28V
2 - 175 MHz

DU2840V

V2.00

Features

- N-Channel Enhancement Mode Device
- HF to VHF Applications
- 40 Watts CW
- Common Source Push-Pull Configuration
- DMOS Structure
- Aluminum Metallization



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

Electrical Characteristics at 25°C

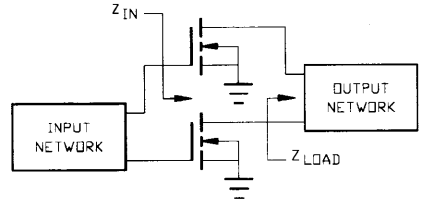
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	I_D=5.0 mA, V_{GS}=0.0 V*
Drain-Source Leakage Current	I_{DSS}	-	1.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V*
Gate-Source Leakage Current	I_{GSS}	-	1.0	µA	V_{GS}=20 V, V_{DS}=0.0 V*
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	V_{DS}=10.0 V, I_{DS}=100 mA*
Forward Transconductance	G_M	500	-	mS	V_{DS}=10.0 V, I_{DS}=1000 mA (pulsed)*
Input Capacitance	C_{ISS}		45	pF	V_{DS}=28.0 V, F=1.0 MHz*
Output Capacitance	C_{OSS}		40	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	13	-	dB	V_{DD}=26.0 V, I_{DQ}=200 mA, P_{OUT}=40 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=26.0 V, I_{DQ}=200 mA, P_{OUT}=40 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=26.0 V, I_{DQ}=200 mA, P_{OUT}=40 W, F=175 MHz

* Per Side

Typical Optimum Device Impedances

F(MHz)	Z_{IN}(Ω)	Z_{LOAD}(Ω)
30	30 - j23	30 + j5.0
50	25 - j28	29 + j6.0
100	15 - j25	22 + j10
200	10 - j13	18 + j11

V_{DD}=28 V, I_{DQ}=200 mA, P_{OUT}=40 W



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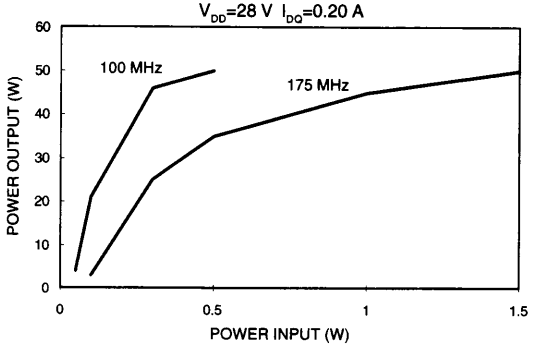
Typical Broadband Performance Curves

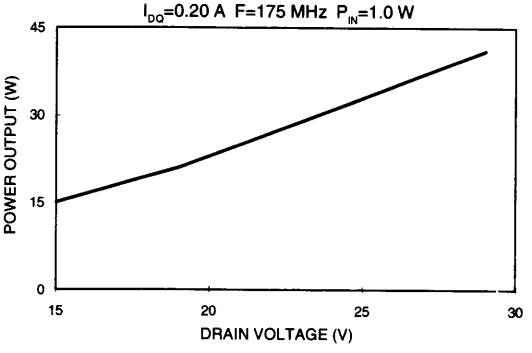
OUTPUT POWER vs INPUT POWER

V_{DD}=28 V I_{DQ}=0.20 A



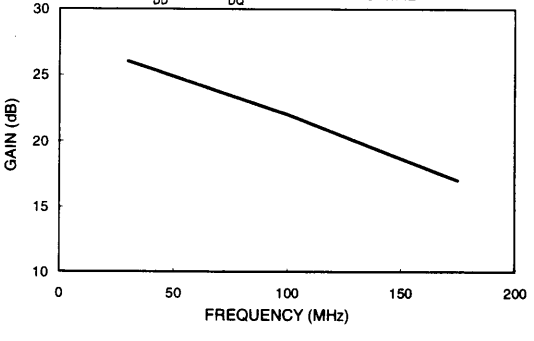
OUTPUT POWER vs DRAIN VOLTAGE

I_{DQ}=0.20 A F=175 MHz P_{IN}=1.0 W



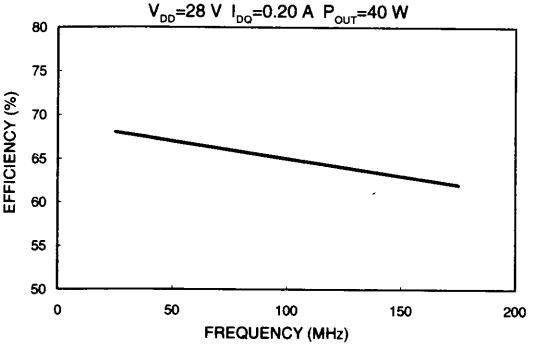
GAIN vs FREQUENCY

V_{DD}=28 V I_{DQ}=200 mA F=175 MHz



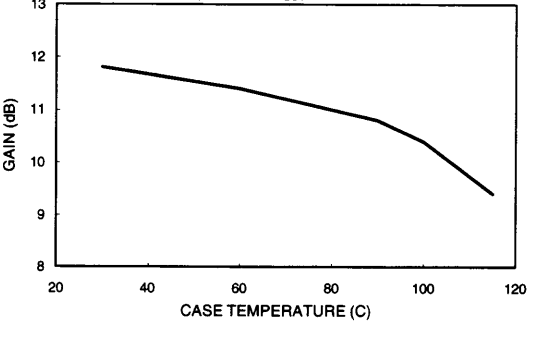
EFFICIENCY vs FREQUENCY

V_{DD}=28 V I_{DQ}=0.20 A P_{OUT}=40 W



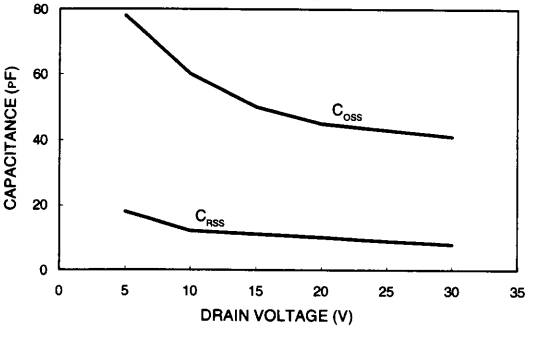
GAIN vs TEMPERATURE

V_{DD}=26 V I_{DQ}=0.40 A P_{OUT}=80 W F=960 MHz



CAPACITANCE vs VOLTAGE

F=1.0 MHz



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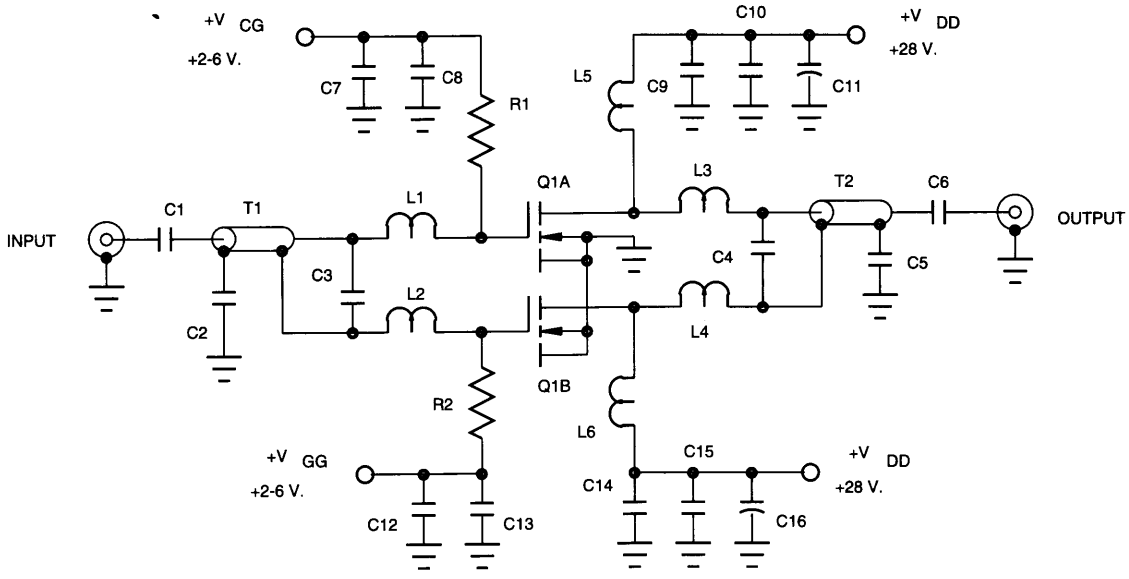
RF Test Fixture



PARTS LIST

C1 C6	ATC 300 pF
C2 C5	ATV 820 pF
C3	ATC 55 pF
C4	ATC 12 pF
C7 C9 C12 C14	ATC 5000 pF
C8 C10 C13 C15	CERAMIC .01 uF
C11 C16	ELECTROYLTIC 47 uF
R1 R2	470 OHMS .25 W
L1 L2 L3 L4	NO. 18 AWG 1.0" LONG X .75" HIGH
L5 L6	9 TURNS OF NO. 18 AWG ON .25" ID
T1 T2	50 OHM .085" OD X 3.0" LONG
Q1	DU2840V

28 VOLT 40 WATT
I_{DQ} = .2 AMP
175 MHZ

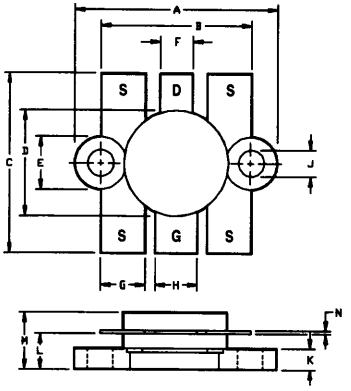
RF MOSFET Power Transistor, 60W, 28V
2 - 175 MHz

DU2860T

V2.00

Features

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



LETTER DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	24.64	24.89	.970	.980
B	18.29	18.54	.720	.730
C	21.21	21.97	.835	.865
D	12.60	12.85	.496	.506
E	6.22	6.48	.245	.255
F	3.81	4.06	.150	.160
G	5.33	5.59	.210	.220
H	5.08	5.33	.200	.210
J	3.05	3.30	.120	.130
K	2.29	2.54	.090	.100
L	4.06	4.57	.160	.180
M	6.68	7.49	.263	.295
N	.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}	12	A
Power Dissipation	P_D	159	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-65 to +150	°C
Thermal Resistance	θ_{JC}	1.1	°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 V, I_{DS}=15.0 mA
Drain-Source Leakage Current	I_{DSS}	-	3.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V
Gate-Source Leakage Current	I_{GSS}	-	3.0	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}=300.0 mA
Forward Transconductance	G_M	1.5	-	S	V_{DS}=10.0 V, I_{DS}=3.0 A, ΔV_{GS}=1.0 V, 80 µs Pulse
Input Capacitance	C_{ISS}	-	135	pF	V_{DS}=28.0 V, F=1.0 MHz
Output Capacitance	C_{OSS}	-	120	pF	V_{DS}=28.0 V, F=1.0 MHz
Reverse Capacitance	C_{RSS}	-	24	pF	V_{DS}=28.0 V, F=1.0 MHz
Power Gain	G_P	13	-	dB	V_{DD}=28.0 V, I_{DQ}=300 mA, P_{OUT}=60.0 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=28.0 V, I_{DQ}=300 mA, P_{OUT}=60.0 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=300 mA, P_{OUT}=60.0 W, F=175 MHz

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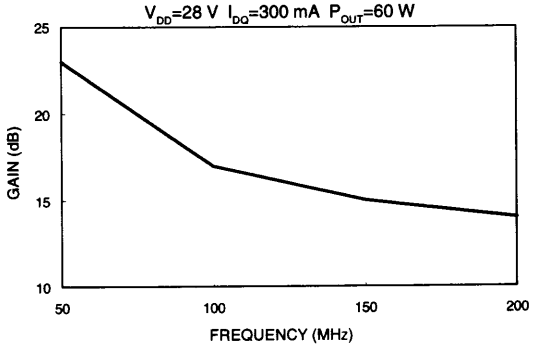
Typical Broadband Performance Curves

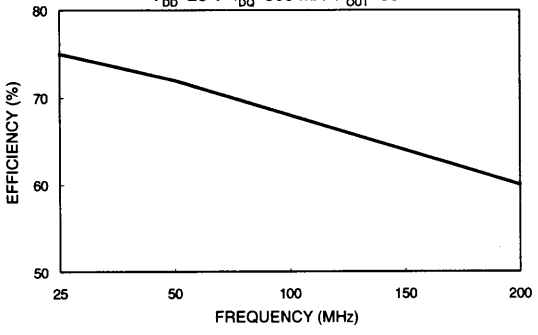
GAIN vs FREQUENCY

V_{DD}=28 V I_{DQ}=300 mA P_{OUT}=60 W



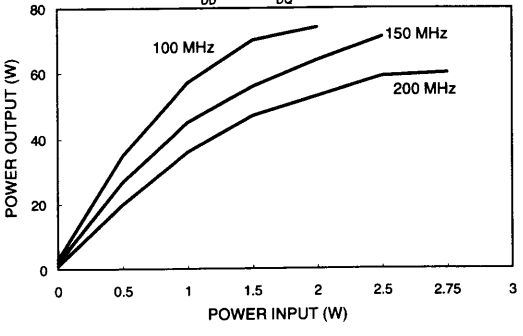
EFFICIENCY vs FREQUENCY

V_{DD}=28 V I_{DQ}=300 mA P_{OUT}=60 W



POWER OUTPUT vs POWER INPUT

V_{DD}=20 V I_{DQ}=300 mA



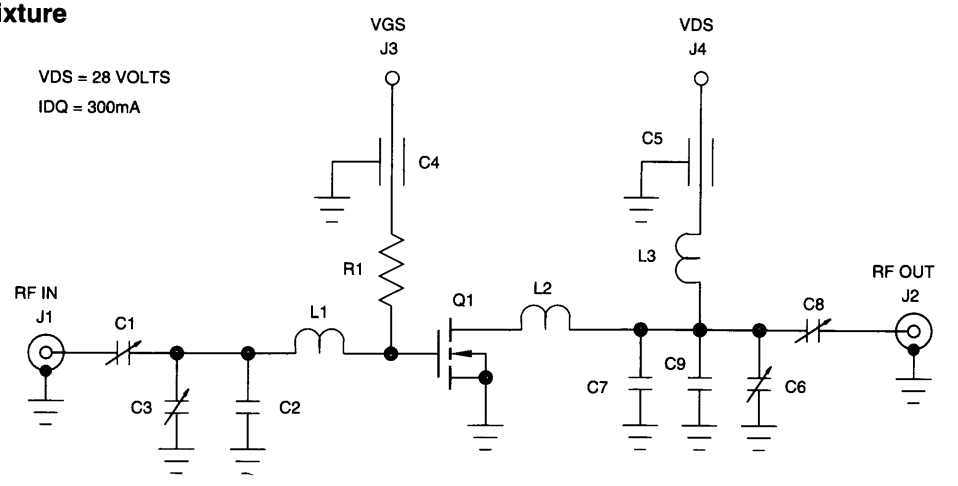
Typical Device Impedance

Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	9.0 - j 4.0	6.0 + j 0.0
50	6.0 - j 5.8	5.0 + j 2.0
100	4.0 - j 4.2	4.0 + j 3.0
200	1.0 - j 1.0	2.0 + j 1.9

V_{DD}=28 V, I_{DQ}=300 mA, P_{OUT}=60 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	CAPACITOR 50pF
C4,C5	FEEDTHROUGH CAPACITOR 0.001uF
C6,C8	TRIMMER CAPACITOR 9-180pF
C7	CAPACITOR 15pF
L1	NO. 12 AWG COPPER WIRE X 1.18" (LOOP 0.5")
L2	NO. 12 AWG COPPER WIRE X 1" (LOOP 0.4")
L3	8 TURNS OF NO. 22 AWG ENAMEL WIRE ON '0.25", CLOSE WOUND
R1	RESISTOR 300 OHMS 0.5 WATT
Q1	DU2860T
BOARD	FR4 0.062"

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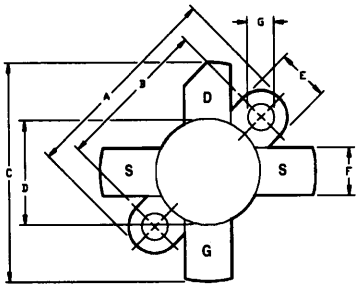
RF MOSFET Power Transistor, 60W, 28V
2 - 175 MHz

DU2860U

V2.00

Features

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



LETTER DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	24.64	24.89	.970	.980
B	18.29	18.54	.720	.730
C	25.91	26.42	1.020	1.040
D	12.60	12.85	.496	.506
E	6.22	6.48	.245	.255
F	5.59	5.84	.220	.230
G	3.05	3.30	.120	.130
H	2.21	2.59	.087	.102
J	3.91	4.42	.154	.174
K	6.53	7.34	.257	.289
L	.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}	12	A
Power Dissipation	P_D	159	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	1.1	°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 V, I_{DS}=15.0 mA
Drain-Source Leakage Current	I_{DSS}	-	3.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V
Gate-Source Leakage Current	I_{GSS}	-	3.0	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}=300.0 mA
Forward Transconductance	G_M	1.5	-	S	V_{DS}=10.0 V, I_{DS}=3.0 A, ΔV_{GS}=1.0 V, 80 µs Pulse
Input Capacitance	C_{ISS}	-	135	pF	V_{DS}=28.0 V, F=1.0 MHz
Output Capacitance	C_{OSS}	-	120	pF	V_{DS}=28.0 V, F=1.0 MHz
Reverse Capacitance	C_{RSS}	-	24	pF	V_{DS}=28.0 V, F=1.0 MHz
Power Gain	G_P	13	-	dB	V_{DD}=28.0 V, I_{DQ}=300 mA, P_{OUT}=60.0 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=28.0 V, I_{DQ}=300 mA, P_{OUT}=60.0 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=300 mA, P_{OUT}=60.0 W, F=175 MHz

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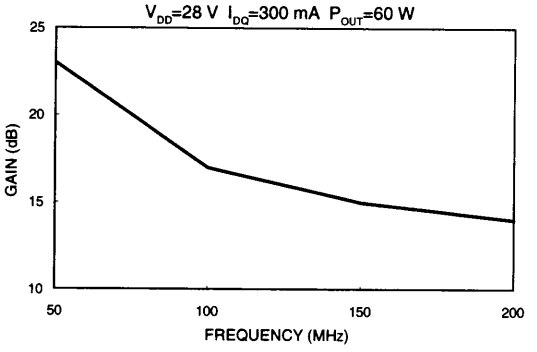
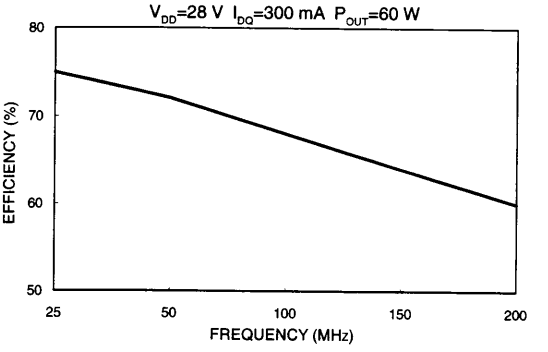
Typical Broadband Performance Curves

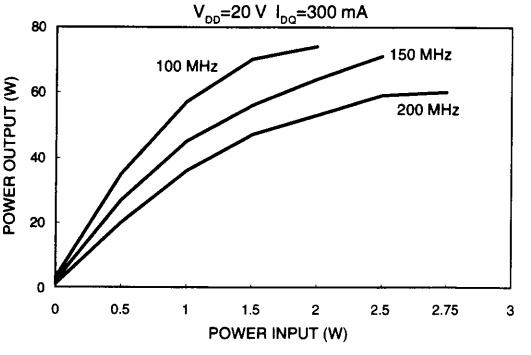
GAIN vs FREQUENCY
V_{DD}=28 V I_{DQ}=300 mA P_{OUT}=60 W



EFFICIENCY vs FREQUENCY
V_{DD}=28 V I_{DQ}=300 mA P_{OUT}=60 W



POWER OUTPUT vs POWER INPUT
V_{DD}=20 V I_{DQ}=300 mA



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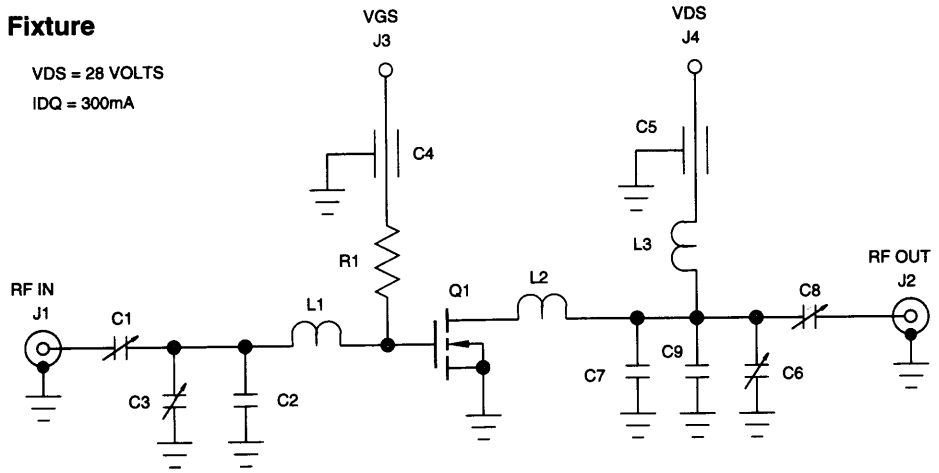
Typical Device Impedance

Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	9.0 - j 4.0	6.0 + j 0.0
50	6.0 - j 5.8	5.0 + j 2.0
100	4.0 - j 4.2	4.0 + j 3.0
200	1.0 - j 1.0	2.0 + j 1.9

V_{DD}=28 V, I_{DQ}=300 mA, P_{OUT}=60 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	CAPACITOR 50pF
C4,C5	FEEDTHROUGH CAPACITOR 0.001uF
C6,C8	TRIMMER CAPACITOR 9-180pF
C7	CAPACITOR 15pF
L1	NO. 12 AWG COPPER WIRE X 1.18" (LOOP 0.5")
L2	NO. 12 AWG COPPER WIRE X 1" (LOOP 0.4")
L3	8 TURNS OF NO. 18 AWG ENAMEL WIRE ON '0.25", CLOSE WOUND
R1	RESISTOR 300 OHMS 0.5 WATT
Q1	DU2860U
BOARD	FR4 0.062"

an AMP company

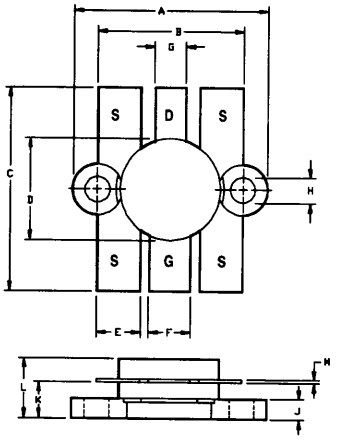
RF MOSFET Power Transistor, 80W, 28V
2 - 175 MHz

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	.128
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 V, I_{DS}=20.0 mA
Drain-Source Leakage Current	I_{DSS}	-	4.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V
Gate-Source Leakage Current	I_{GSS}	-	4.0	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}=400.0 mA
Forward Transconductance	G_M	2.0	-	S	V_{DS}=10.0 V, I_{DS}=4.0 A, ΔV_{GS}=1.0 V, 80 μs Pulse
Input Capacitance	C_{ISS}	-	180	pF	V_{DS}=28.0 V, F=1.0 MHz
Output Capacitance	C_{OSS}	-	160	pF	V_{DS}=28.0 V, F=1.0 MHz
Reverse Capacitance	C_{RSS}	-	32	pF	V_{DS}=28.0 V, F=1.0 MHz
Power Gain	G_P	13	-	dB	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz

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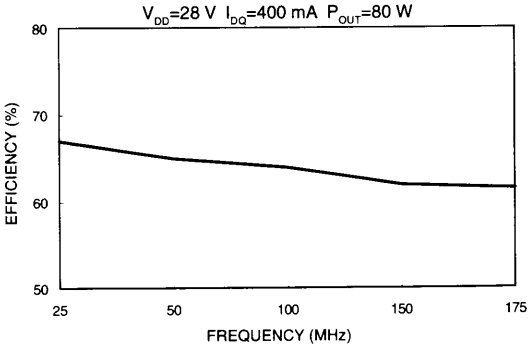
Typical Broadband Performance Curves

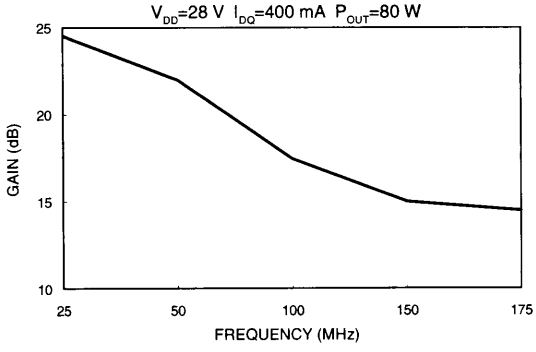
EFFICIENCY vs FREQUENCY

V_{DD}=28 V I_{DQ}=400 mA P_{OUT}=80 W



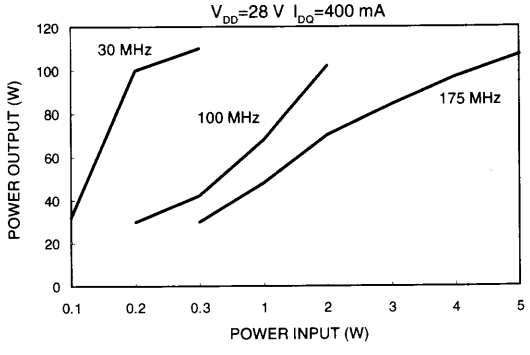
GAIN vs FREQUENCY

V_{DD}=28 V I_{DQ}=400 mA P_{OUT}=80 W



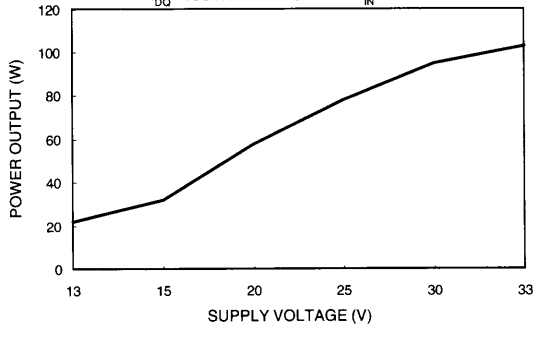
POWER OUTPUT vs POWER INPUT

V_{DD}=28 V I_{DQ}=400 mA



POWER OUTPUT vs SUPPLY VOLTAGE

I_{DQ}=400 mA F=175 MHz P_{IN}=3.0 W



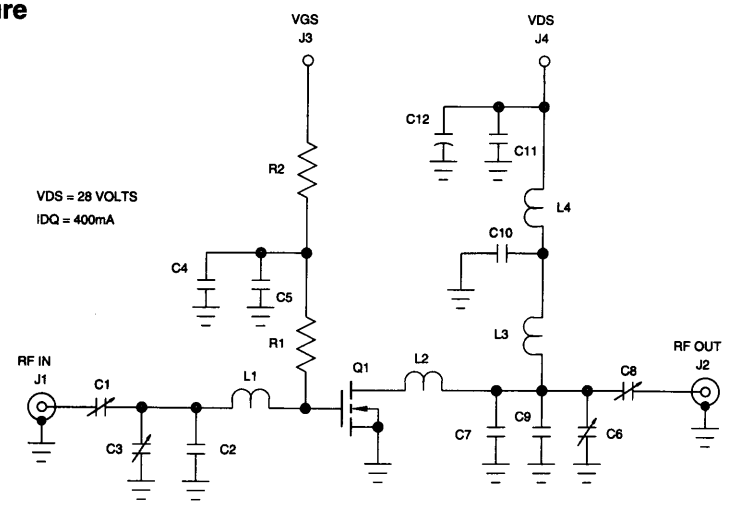
Typical Device Impedance

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_{DQ}=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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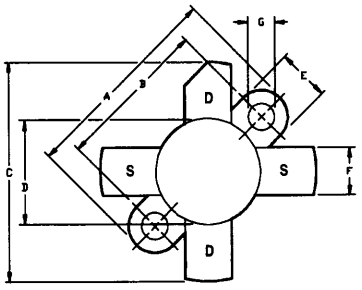
RF MOSFET Power Transistor, 80W, 28V
2 - 175 MHz

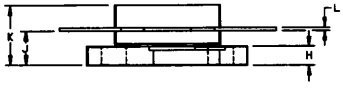
DU2880U

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	24.64	24.89	.970	.980
B	18.29	18.54	.720	.730
C	25.91	26.42	1.020	1.040
D	12.60	12.85	.496	.506
E	6.22	6.48	.245	.255
F	5.59	5.84	.220	.230
G	3.05	3.30	.120	.130
H	2.21	2.59	.087	.102
J	3.91	4.42	.154	.174
K	6.53	7.34	.257	.289
L	.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 V, I_{DS}=20.0 mA
Drain-Source Leakage Current	I_{DSS}	-	4.0	mA	V_{DS}=28.0 V, V_{GS}=0.0 V
Gate-Source Leakage Current	I_{GSS}	-	4.0	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}=400.0 mA
Forward Transconductance	G_M	2.0	-	S	V_{DS}=10.0 V, I_{DS}=4.0 A, ΔV_{GS}=1.0 V, 80 µs Pulse
Input Capacitance	C_{ISS}	-	180	pF	V_{DS}=28.0 V, F=1.0 MHz
Output Capacitance	C_{OSS}	-	160	pF	V_{DS}=28.0 V, F=1.0 MHz
Reverse Capacitance	C_{RSS}	-	32	pF	V_{DS}=28.0 V, F=1.0 MHz
Power Gain	G_P	13	-	dB	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz

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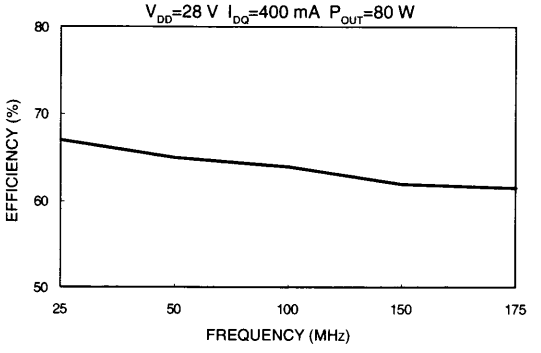
Typical Broadband Performance Curves

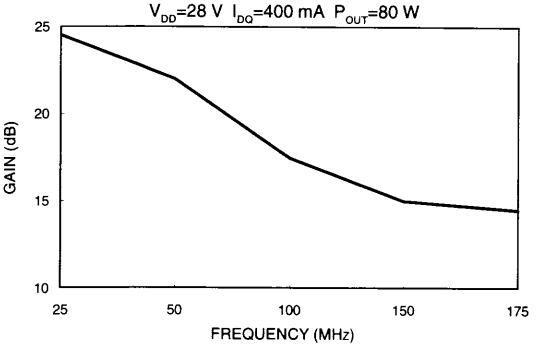
EFFICIENCY vs FREQUENCY

V_{DD}=28 V I_{DQ}=400 mA P_{OUT}=80 W



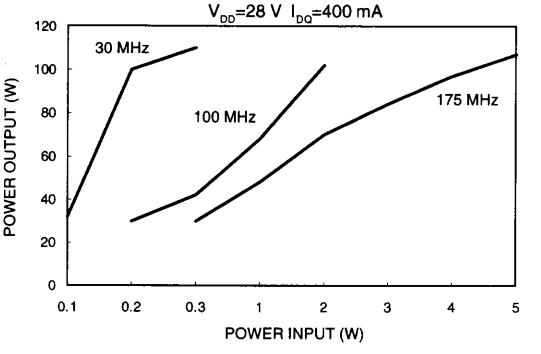
GAIN vs FREQUENCY

V_{DD}=28 V I_{DQ}=400 mA P_{OUT}=80 W



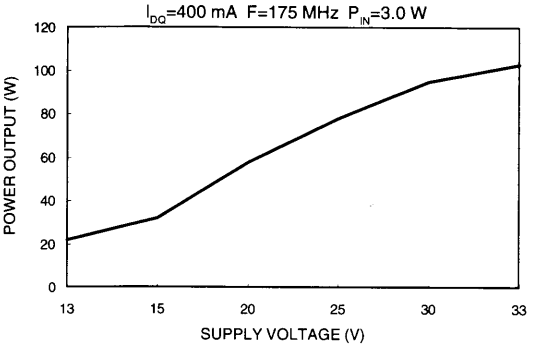
POWER OUTPUT vs POWER INPUT

V_{DD}=28 V I_{DQ}=400 mA



POWER OUTPUT vs SUPPLY VOLTAGE

I_{DQ}=400 mA F=175 MHz P_{IN}=3.0 W



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_{DQ}=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.

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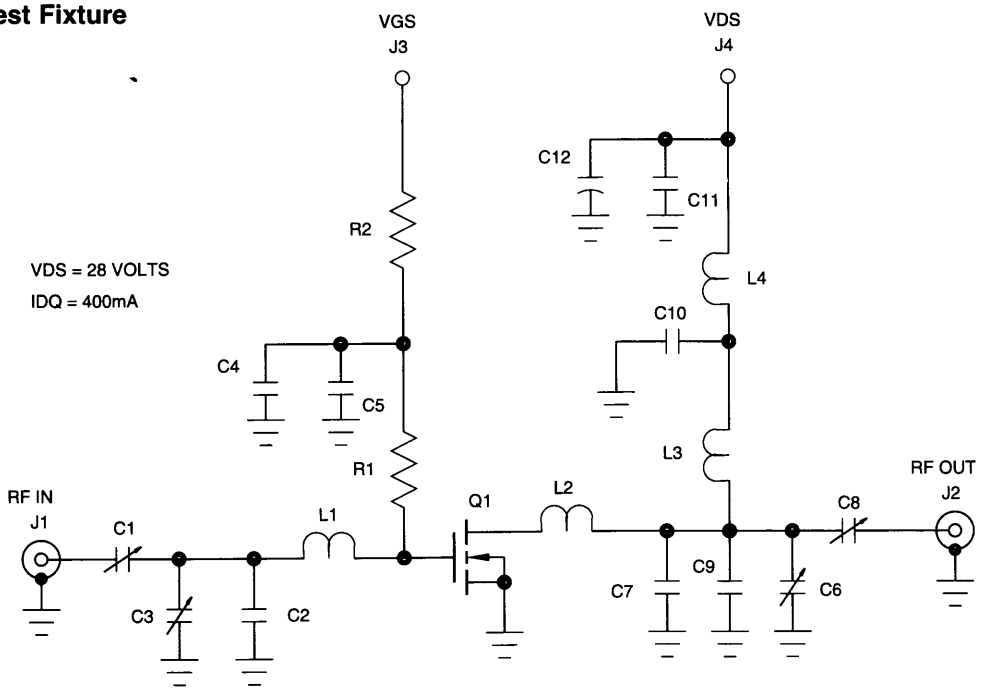
RF Test Fixture



PARTS LIST

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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	DU2880U
BOARD	FR4 0.062"

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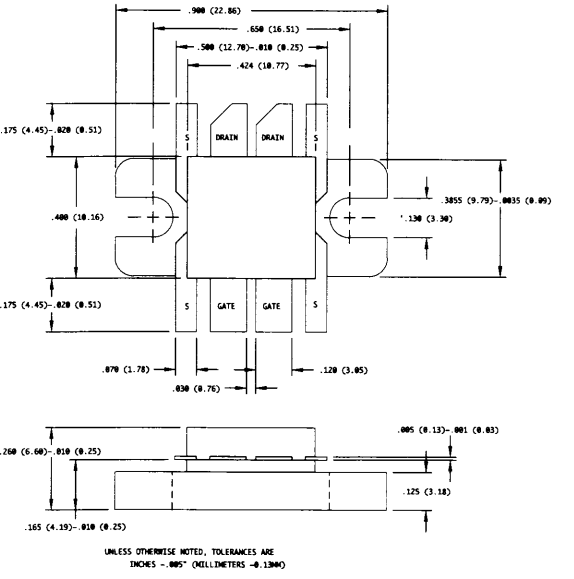
RF MOSFET Power Transistor, 80W, 28V
2 - 175 MHz

DU2880V

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



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	206	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 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 V, I_{DS}=10.0 mA*
Drain-Source Leakage Current	I_{DSS}	-	2.0	mA	V_{DS}=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	1.0	-	S	V_{DS}=10.0 V, I_{DS}=2000.0 mA, ΔV_{GS}=1.0 V, 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}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD}=28.0 V, I_{DQ}=400 mA, P_{OUT}=80.0 W, F=175 MHz

* Per Side

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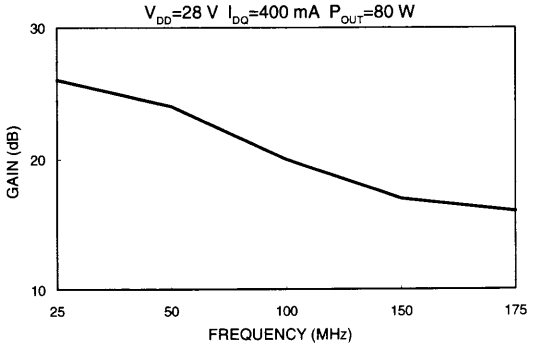
Typical Broadband Performance Curves

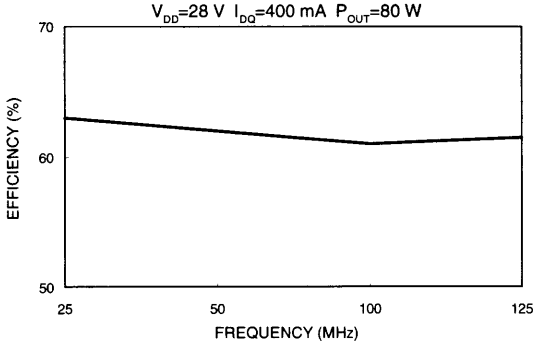
GAIN vs FREQUENCY

V_{DD}=28 V I_{DQ}=400 mA P_{OUT}=80 W



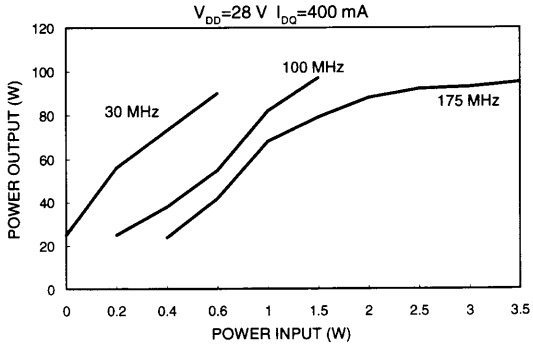
EFFICIENCY vs FREQUENCY

V_{DD}=28 V I_{DQ}=400 mA P_{OUT}=80 W



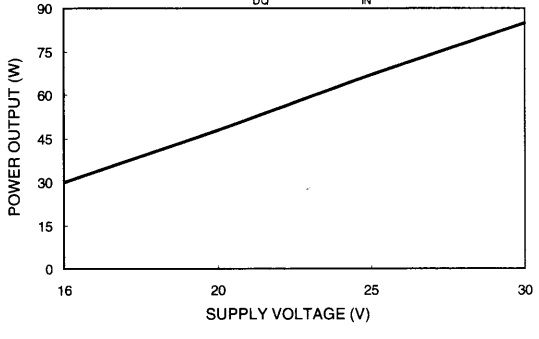
POWER OUTPUT vs POWER INPUT

V_{DD}=28 V I_{DQ}=400 mA



POWER OUTPUT vs SUPPLY VOLTAGE

F=175 MHz I_{DQ}=400 mA P_{IN}=1.5 W



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Typical Device Impedance

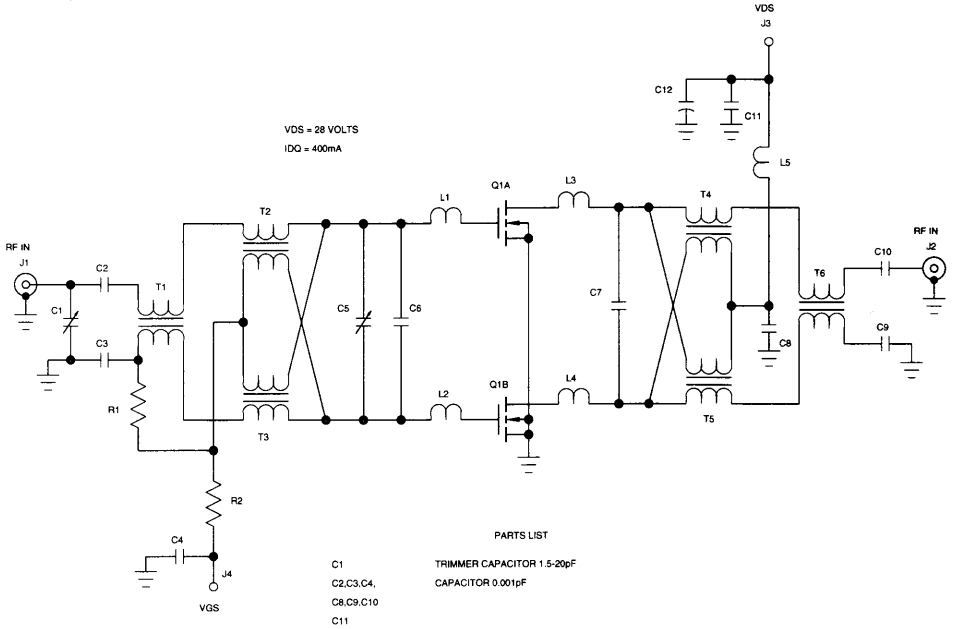
Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
30	4.5 - j 14.5	13.5 + j 4.5
100	3.0 - j 10.5	13.5 + j 6.0
175	2.0 - j 7.5	12.0 + j 4.5

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

Z_{IN} is the series equivalent input impedance of the device from gate to gate.

Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to drain.

RF Test Fixture



PARTS LIST

C1	TRIMMER CAPACITOR 1.5-20pF
C2,C3,C4, C8,C9,C10 C11	CAPACITOR 0.001pF
C5	TRIMMER CAPACITOR 5-80pF
C6	CAPACITOR 68pF
C7	CAPACITOR 50pF
C12	ELECTROLYTYIC CAPACITOR 100uF 50 VOLTS
L1,L2	0.50" X 0.10" TRACE ON BOARD + Ø0.125" X Ø0.25" LOOP
L3,L4	0.87" X 0.10" TRACE ON BOARD
L5	7.5 TURNS OF NO. 20 AWG COPPER WIRE X Ø0.31"
R1	RESISTOR 18 OHMS 2 WATTS
R2	RESISTOR 10K OHMS
T1,T6	50 OHM BALUN CORES. 2 TURNS OF 50 OHM COAX THRU 2 STACKPOLE 57-1522
T2,T3,T4	4:1 TRANSFORMER 1 TURN OF 2 50 OHM COAX IN
T5	PARALLEL THRU 2 STACKPOLE 57-1522 BALUN CORES
Q1	DU2880V
BOARD	FR4 0.062"

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