tyco / Electronics

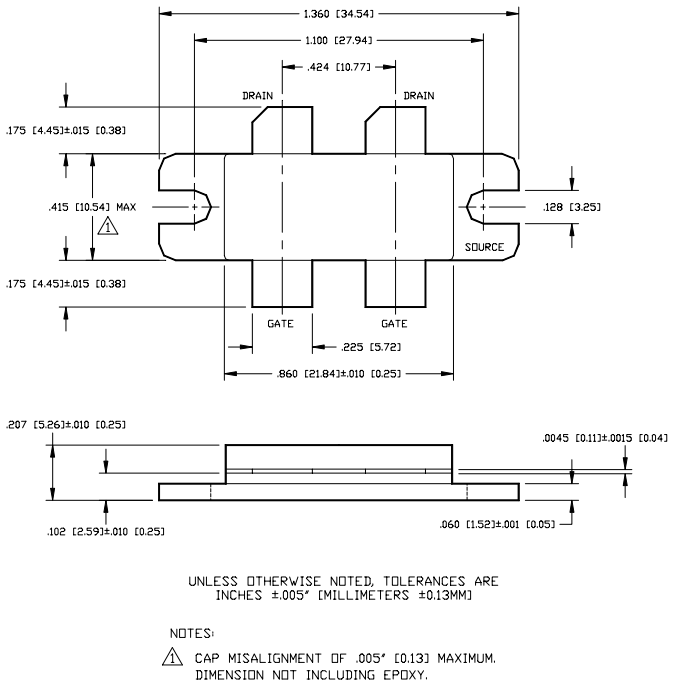
M/A-COM

UF28150J PRELIMINARY
POWER MOSFET TRANSISTOR
150 WATTS, 100 - 500 MHz, 28 V

FEATURES

- N-Channel Enhancement Mode Device
- Applications
- 150 Watts CW
- Common Source Gemini Configuration
- RESFET Structure
- Internal Input Impedance Matching
- Gold Metallization

OUTLINE DRAWING



ABSOLUTE MAXIMUM RATINGS AT 25°C

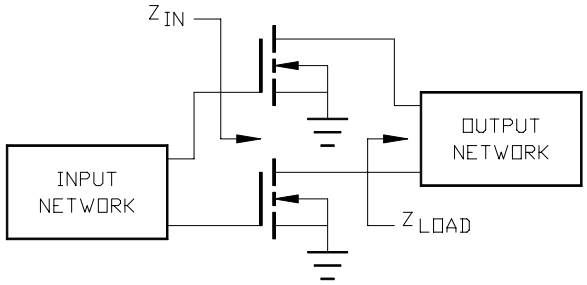
Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	20	V
Drain-Source Current	I_{DS}	28	A
Dissipation @25°C	P_D	233	W
Storage Temperature	Tstg	-55 to +150	°C
Junction Temperature	Tj	200	°C
Thermal Resistance	θ_{jc}	0.75	°C/W

ELECTRICAL CHARACTERISTICS AT 25°C (*per side)

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	V	I_D=40 mA, V_{GS}=0.0 V*
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}	-	2.0	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}=200 mA*
Forward Transconductance	G_m	1.0	-	S	V_{DS}=10.0 V, I_{DS}=2000 mA (pulsed)*
Input Capacitance	C_{ISS}		200	pF	V_{DS}=28.0 V, f=1.0 MHz (Reference Only)*
Reverse Capacitance	C_{RSS}		50	pF	V_{DS}=28.0 V, f=1.0 MHz*
Output Capacitance	C_{OSS}		14	pF	V_{DS}=28.0 V, f=1.0 MHz*
Power Gain	G_P	10	-	dB	V_{DD}=26 V, I_{DQ}=400 mA, Pout=80 W, F=960 MHz
Collector Efficiency	η	50	-	%	V_{DD}=26 V, I_{DQ}=400 mA, Pout=80 W, F=960 MHz
Load Mismatch Tolerance	VSWR	-	3.0:1	-	V_{DD}=26 V, I_{DQ}=400 mA, Pout=80 W, F=960 MHz

TYPICAL OPTIMUM DEVICE IMPEDANCE

F (MHz)	Z_{in} (Ω)	Z_{load} (Ω)
935	4.6 + j8.0	2.3 + j3.1
960	4.7 + j7.8	2.4 + j3.1



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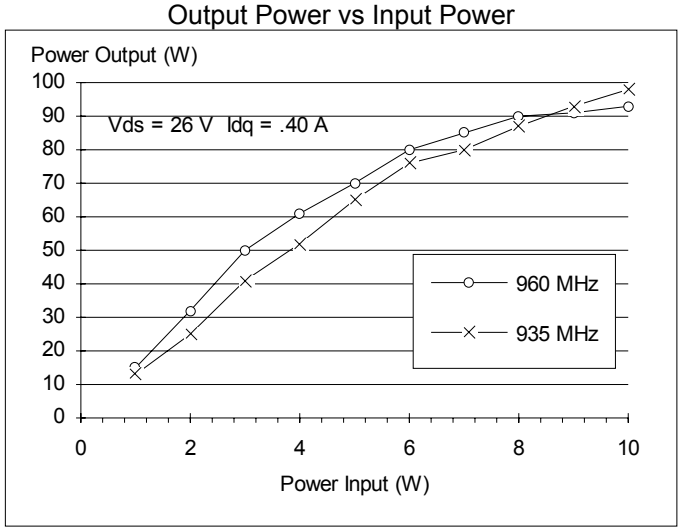
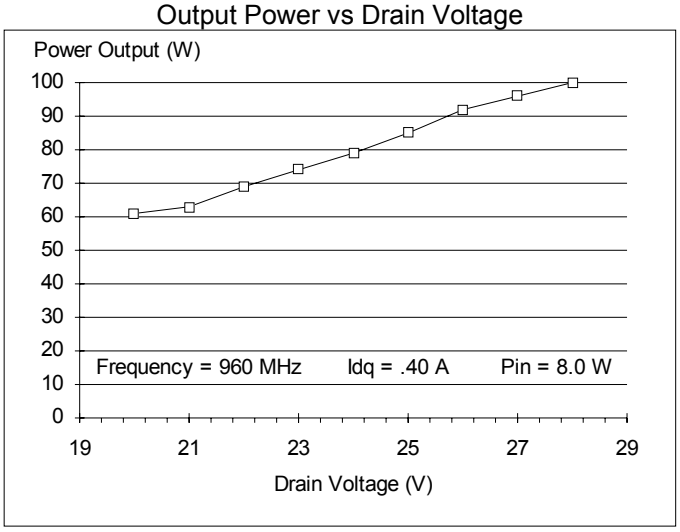
(310) 320-6160 ● FAX (310) 618-9191

TYPICAL BROADBAND PERFORMANCE CURVES - UF28150J

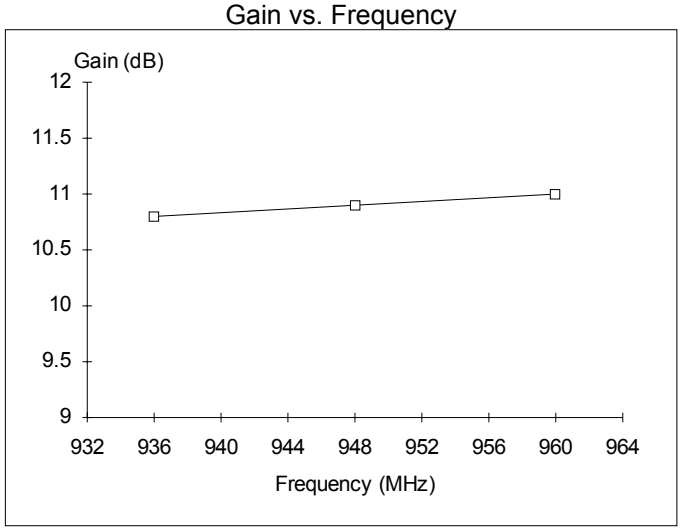
Output Power vs Input Power



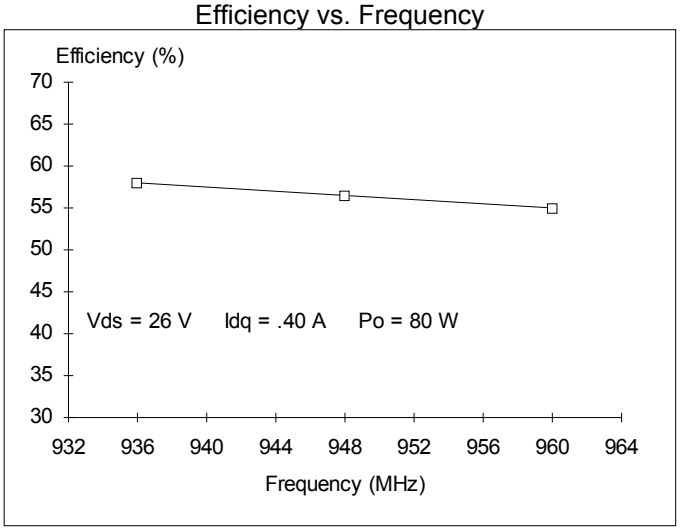
Output Power vs Drain Voltage



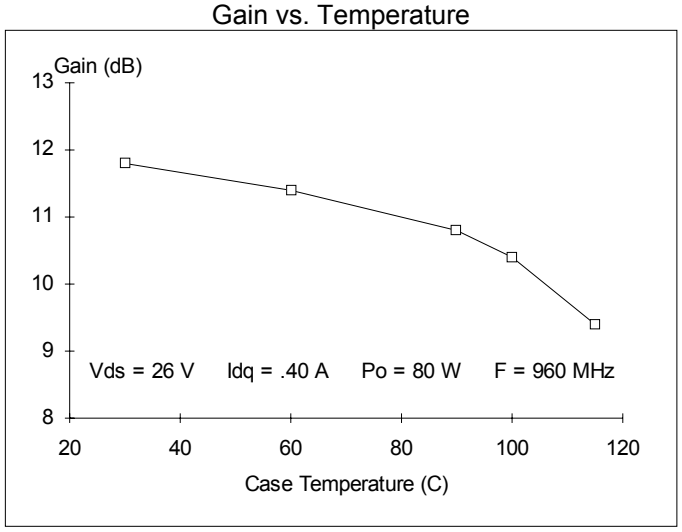
Gain vs. Frequency



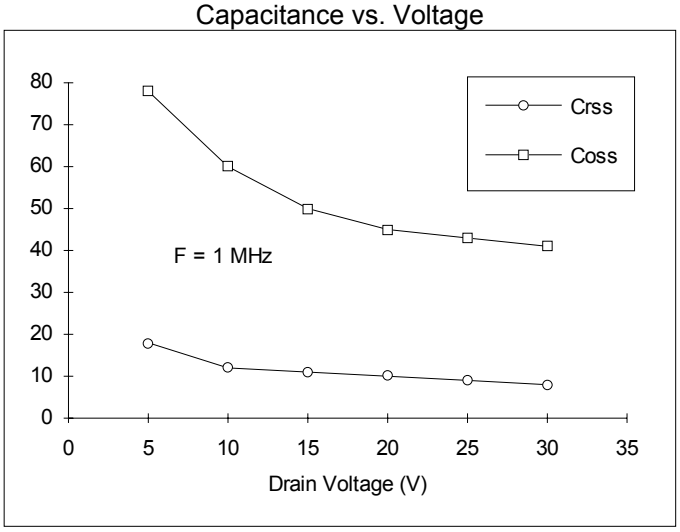
Efficiency vs. Frequency



Gain vs. Temperature



Capacitance vs. Voltage



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Typical Device Impedance

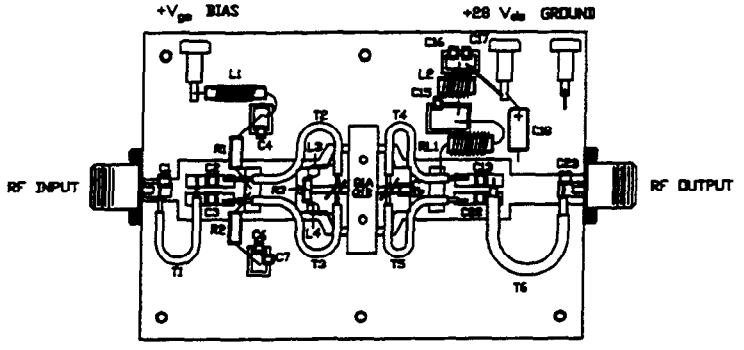
Frequency (MHz)	Z_{IN} (OHMS)	Z_{LOAD} (OHMS)
100	3.7 - j 5.9	3.0 - j 0.7
300	2.7 - j 5.8	2.6 - j 0.55
500	2.5 + j 2.9	2.5 - j 0.5

V_{DD}=28 V, I_{DQ}=400 mA, P_{OUT}=150.0 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

C23	1.0pF
C1	9.1pF
C12	11pF
C2, 3, 13, 22	270pF
C7, 16	680pF
C4, 6, 15, 17	.015uF
C18	50uF 50 V.
R1	11K OHM .25 W. 10%
R2	47 OHM .50 W. 10%
R3	12 OHM .25 W. 10%
T1	2.50" OF 50 OHM (.085" OD SEMI-RIGID CABLE
T2, 3, 4, 5	2.50" OF 10 OHM (.070" OD SEMI-RIGID CABLE
T6	2.50" OF 50 OHM (.141" OD SEMI-RIGID CABLE
L1	5uH
L2	16 TURNS OF NO. 18 AWG ON TORID CORE CINDIANA GENERAL F6270-Q1
L3, 4	4 TURNS OF NO. 18 AVG ON .125" DIAMETER
RL1	9 TURNS OF NO. 18 AVG ON 15 OHM 2 W. 10% RESISTOR
Q1A, 1B	UF28150J