

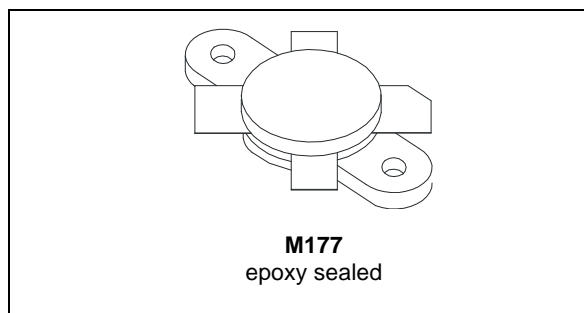


SD3933

RF POWER TRANSISTORS HF/VHF/UHF N-CHANNEL MOSFETs

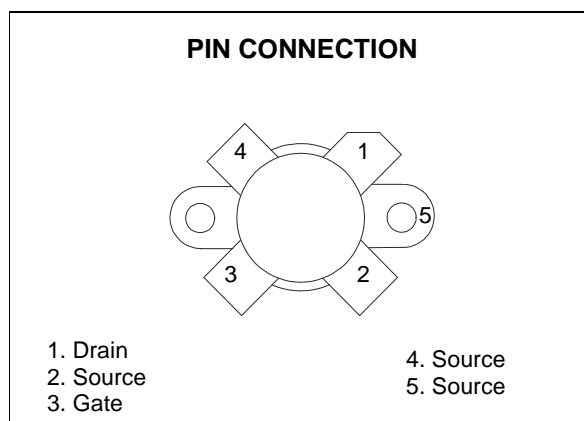
PRELIMINARY DATA

- GOLD METALLIZATION
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 300\text{ W MIN. WITH } 28\text{ dB GAIN @ } 30\text{ MHz}$



DESCRIPTION

The SD3933 is a gold metallized N-Channel MOS field-effect RF power transistor. It is intended for use in 100 V dc large signal applications up to 200 MHz.



ORDER CODES

Order Codes	Marking	Package	Packaging
SD3933	SD3933	M177	Plastic Tray

ABSOLUTE MAXIMUM RATINGS ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain Source Voltage	250	V
V_{DGR}	Drain-Gate Voltage ($R_{GS} = 1\text{M}\Omega$)	250	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current	20	A
P_{DISS}	Power Dissipation	648	W
T_j	Max. Operating Junction Temperature	200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	-65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	0.27	$^{\circ}\text{C/W}$
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July 2004

REV. 1

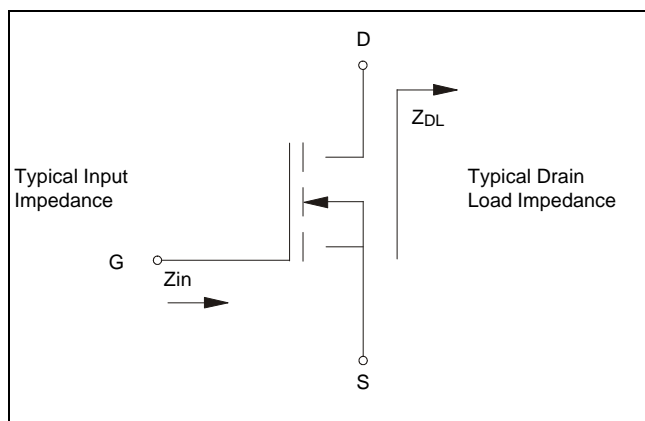
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SD3933**ELECTRICAL SPECIFICATION** ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)**STATIC**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$	$I_{DS} = 100\text{ mA}$	250			V
I_{DSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$			100	μA
I_{GSS}	$V_{GS} = 20\text{ V}$	$V_{DS} = 0\text{ V}$			500	nA
$V_{GS(Q)}$	$V_{DS} = 10\text{ V}$	$I_D = 250\text{ mA}$	1.5		4.0	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$	$I_D = 10\text{ A}$		2.75	5	V
GFS	$V_{DS} = 10\text{ V}$	$I_D = 5\text{ A}$	6	8		mho
C_{ISS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$		1100		pF
C_{OSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$		390		pF
C_{RSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$		13		pF

DYNAMIC

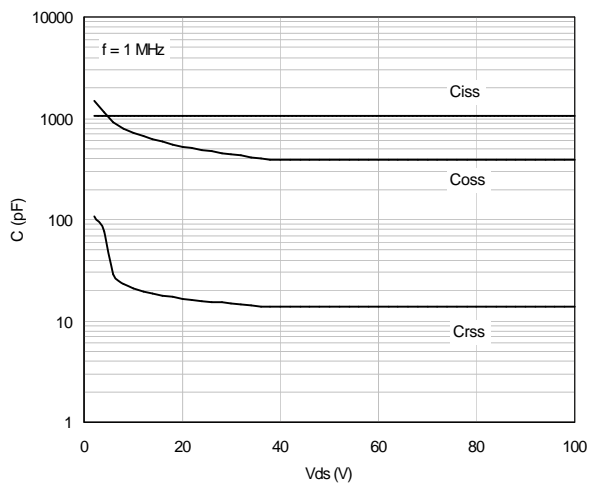
Symbol	Test Conditions		Min.	Typ.	Max.	Unit
P_{OUT}	$V_{DD} = 100\text{ V}$	$I_{DQ} = 250\text{ mA}$ $f = 30\text{ MHz}$	300			W
GPS	$V_{DD} = 100\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 300\text{ W}$ $f = 30\text{ MHz}$		28		dB
η_D	$V_{DD} = 100\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 300\text{ W}$ $f = 30\text{ MHz}$		62		%
Load Mismatch	$V_{DD} = 100\text{ V}$	$I_{DQ} = 250\text{ mA}$ $P_{OUT} = 300\text{ W}$ $f = 30\text{ MHz}$ All Phase Angles	10:1			VSWR

IMPEDANCE DATA

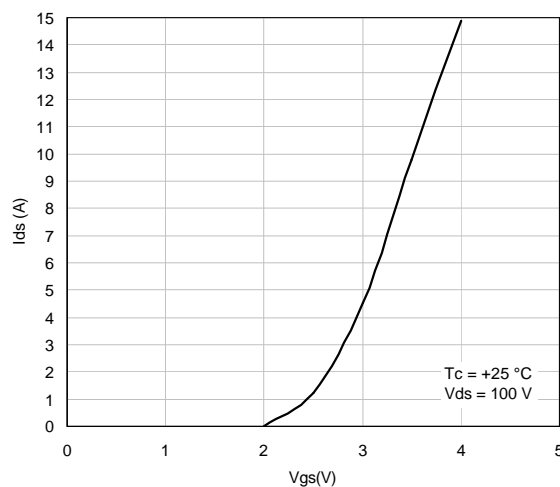
FREQ	$Z_{IN} (\Omega)$	$Z_{DL} (\Omega)$
30 MHz	$2 - j 2.5$	$7 + j 7.5$

TYPICAL PERFORMANCE

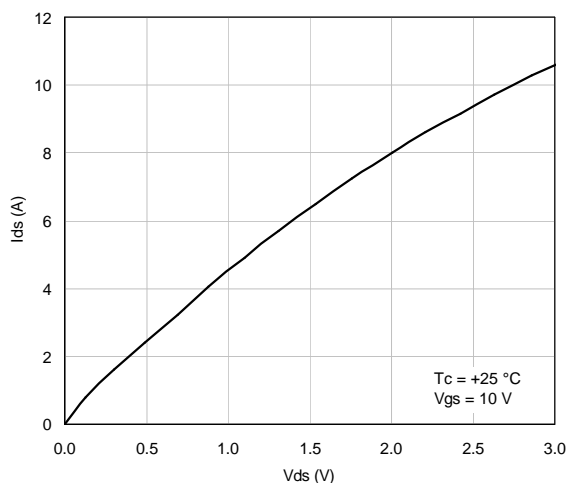
Capacitance Vs Drain Source Voltage



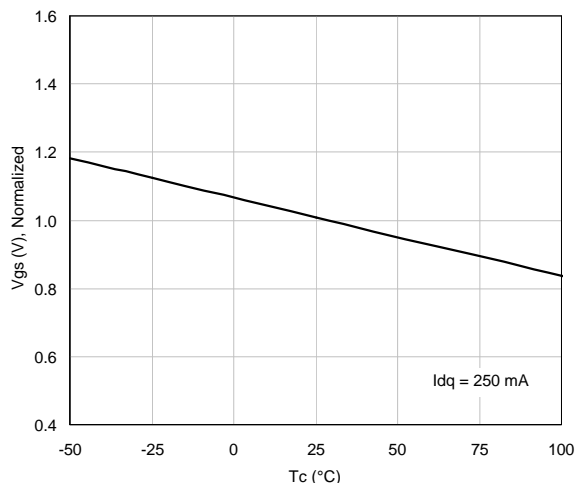
Drain Current Vs Gate Source Voltage



Drain Current Vs Drain Source Voltage



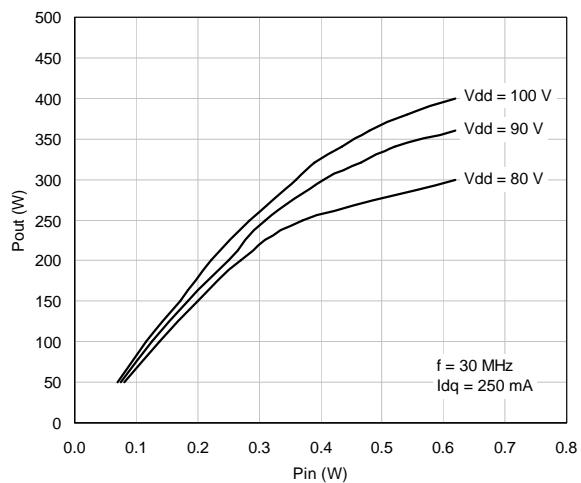
Gate Source Voltage Vs Case Temperature



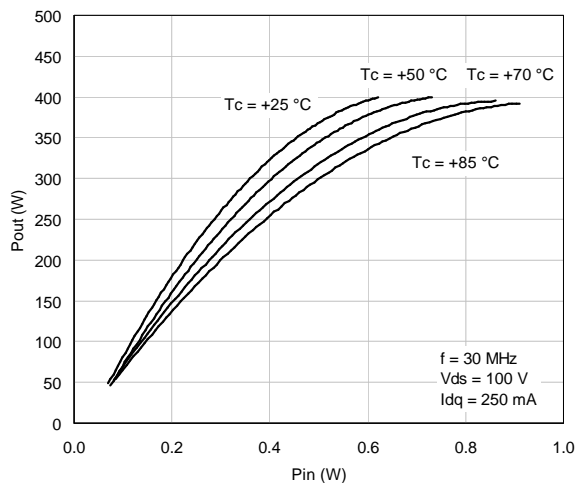
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TYPICAL PERFORMANCE

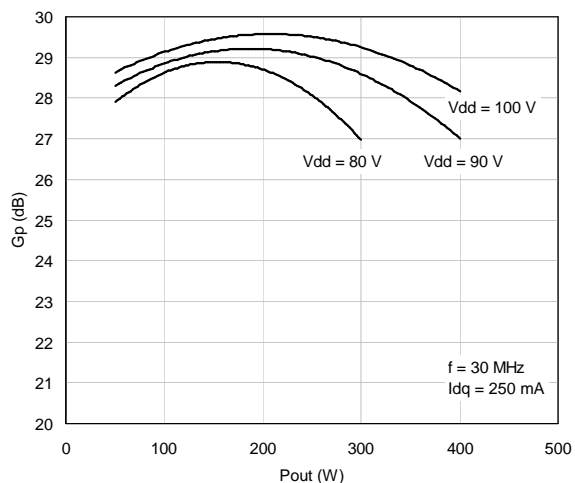
Output Power Vs Input Power



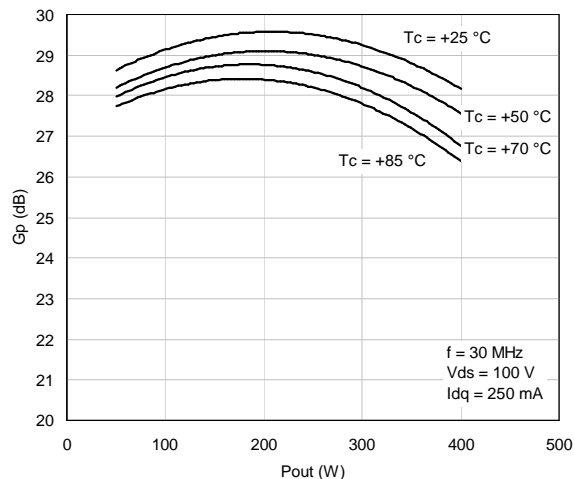
Output Power Vs Input Power



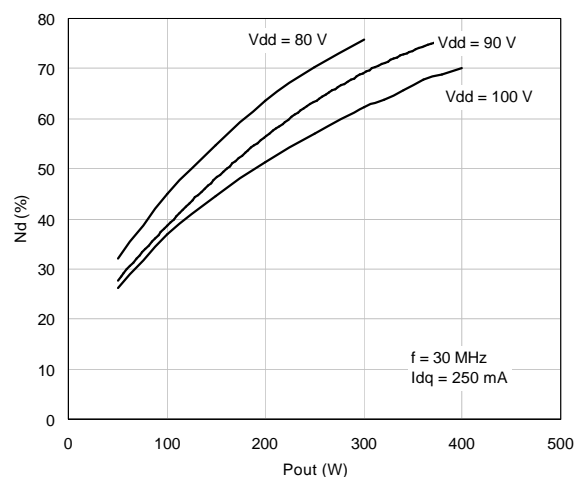
Power Gain Vs Output Power



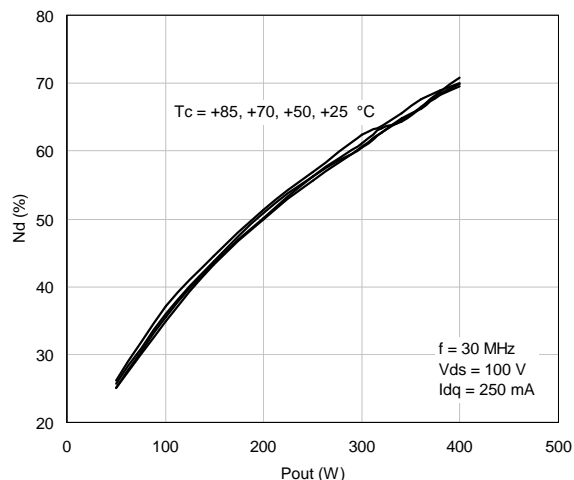
Power Gain Vs Output Power



Efficiency Vs Output Power

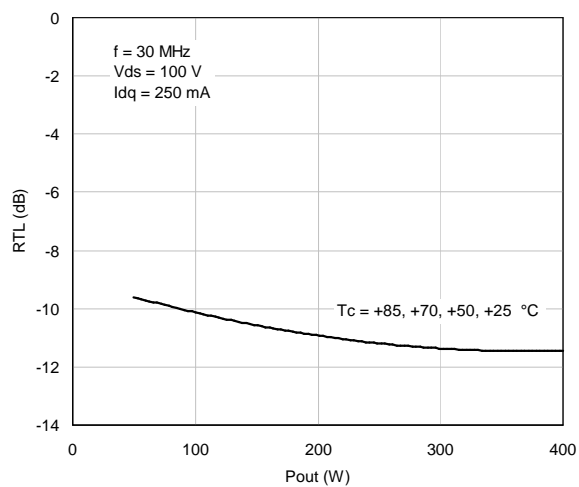


Efficiency Vs Output Power

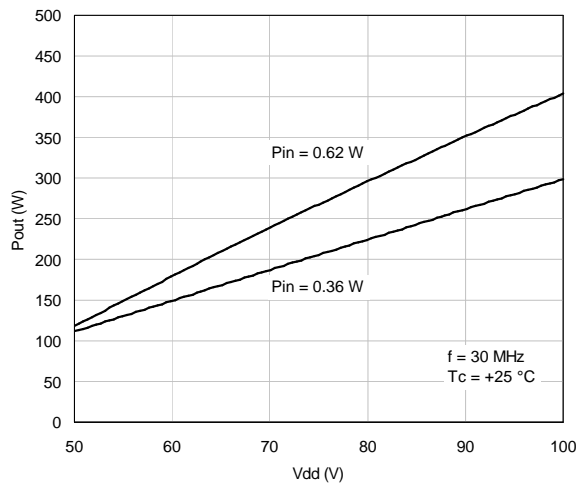


TYPICAL PERFORMANCE

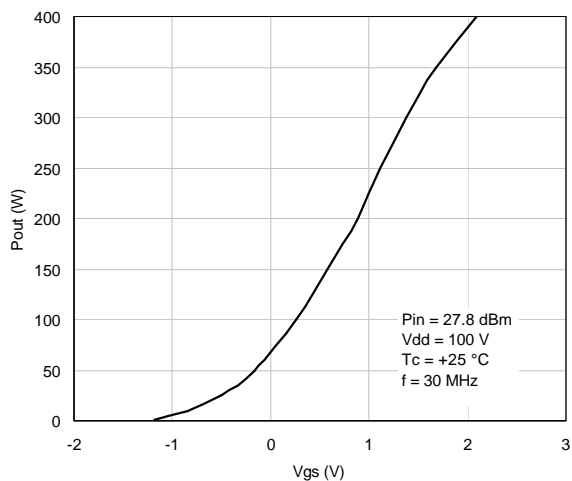
Input Return Loss Vs Output Power



Output Power Vs Supply Voltage



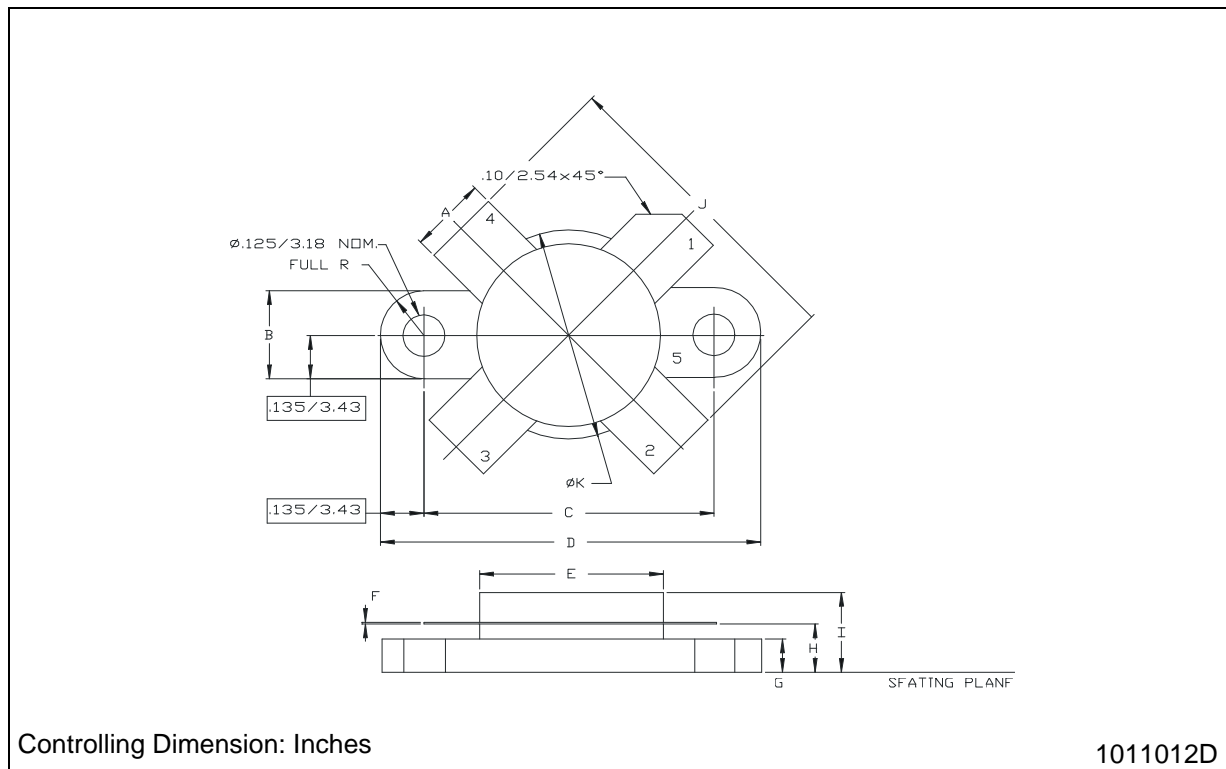
Output Power Vs Gate Source Voltage



SD3933

M177 (.550 DIA 4/L N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	5.72		5.97	0.225		0.235
B	6.73		6.96	0.265		0.275
C	21.84		22.10	0.860		0.870
D	28.70		28.96	1.130		1.140
E	13.84		14.10	0.545		0.555
F	0.08		0.18	0.003		0.007
G	2.49		2.74	0.098		0.108
H	3.81		4.32	0.150		0.170
I			7.11			0.280
J	27.43		28.45	1.080		1.120
K	15.88		16.13	0.625		0.635



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