



SD3933

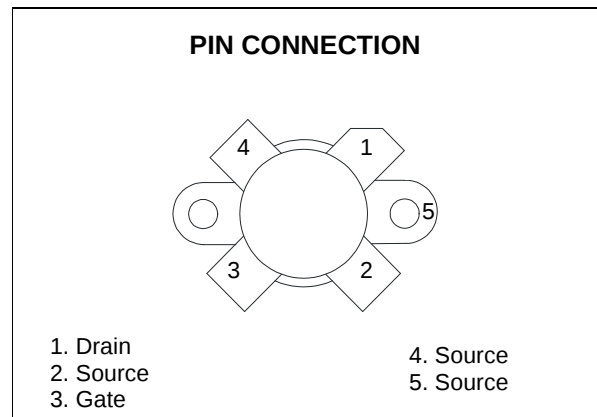
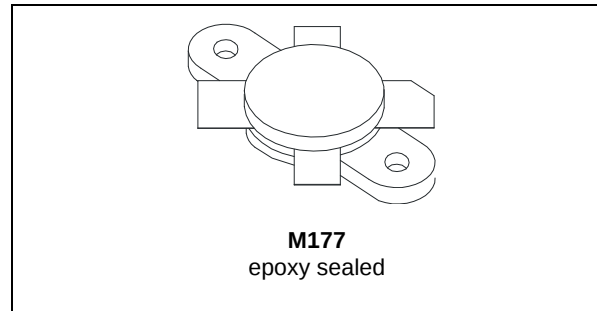
RF POWER TRANSISTORS HF/VHF/UHF N-CHANNEL MOSFETs

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

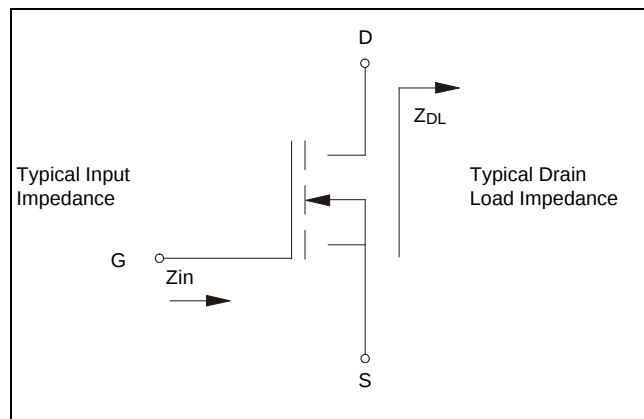
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SD3933**ELECTRICAL SPECIFICATION** ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)**STATIC**

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
G_{FS}	$V_{DS} = 10\text{ V}$	$I_D = 5\text{ A}$	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

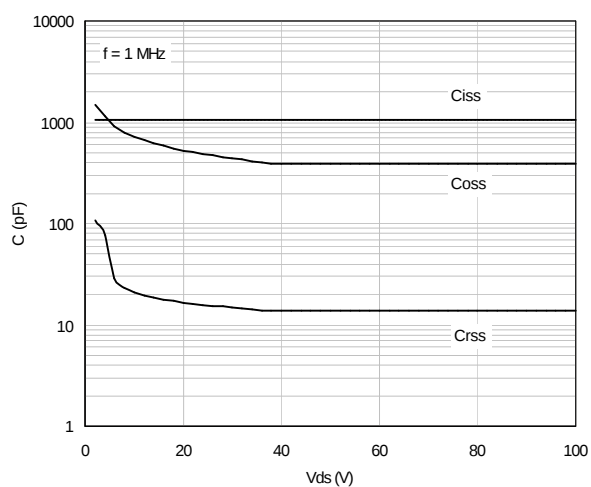
Symbol	Test Conditions			Min.	Typ.	Max.	Unit
P_{OUT}	$V_{DD} = 100\text{ V}$	$I_{DQ} = 250\text{ mA}$	$f = 30\text{ MHz}$	300			W
G_{PS}	$V_{DD} = 100\text{ V}$	$I_{DQ} = 250\text{ mA}$	$P_{OUT} = 300\text{ W}$		28		dB
η_D	$V_{DD} = 100\text{ V}$	$I_{DQ} = 250\text{ mA}$	$P_{OUT} = 300\text{ W}$		62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

IMPEDANCE DATA

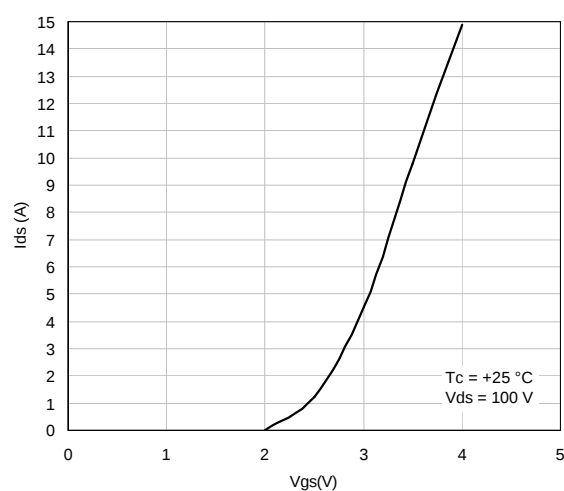
FREQ	$Z_{IN} (\Omega)$	$Z_{DL} (\Omega)$
30 MHz	$2 - j\,2.5$	$7 + j\,7.5$

TYPICAL PERFORMANCE

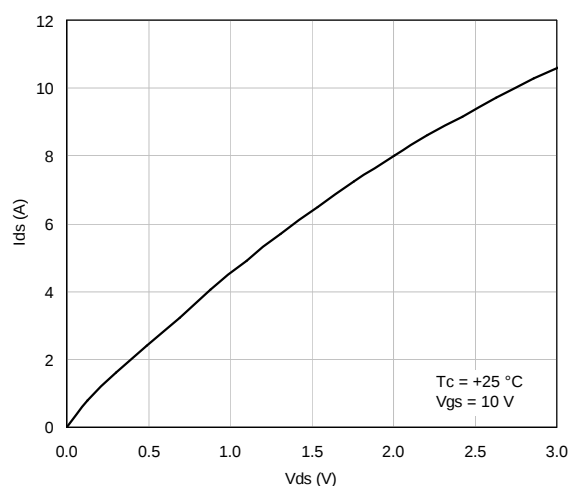
Capacitance Vs Drain Source Voltage



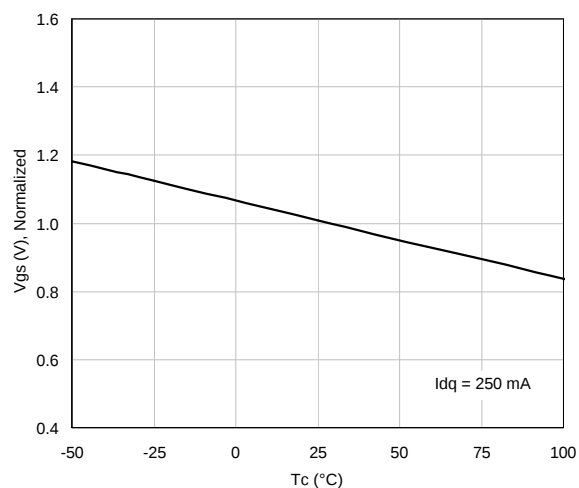
Drain Current Vs Gate Source Voltage

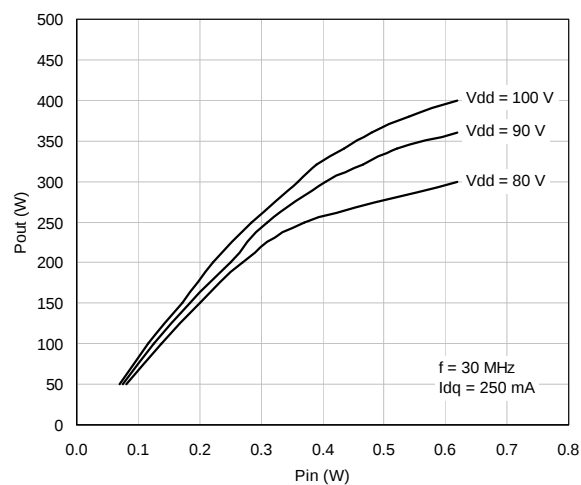
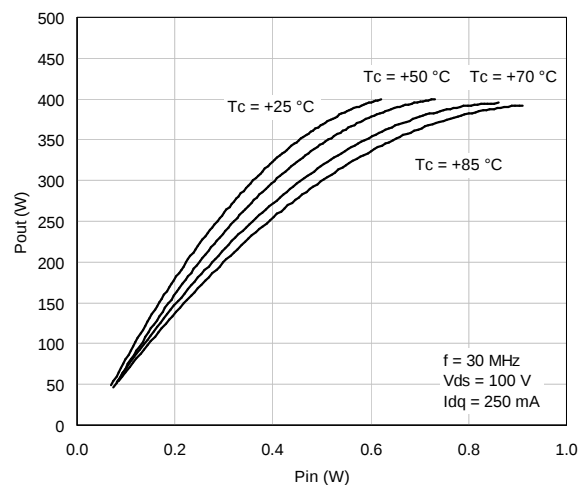
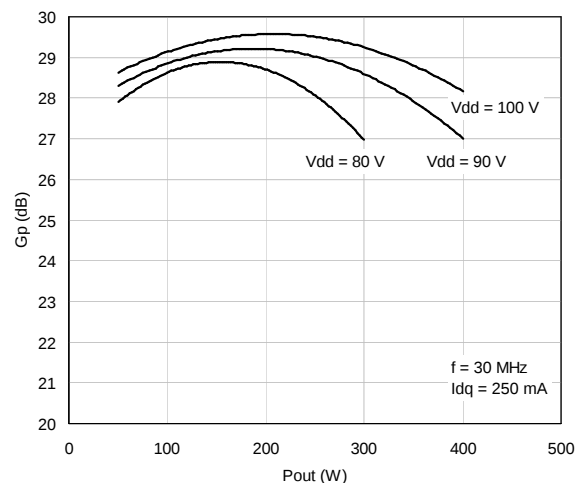
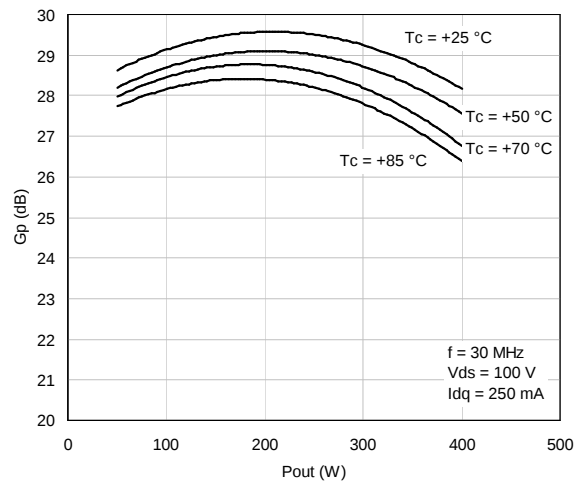
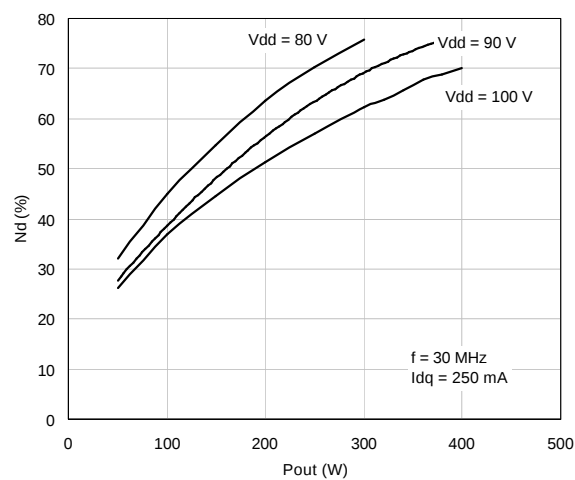
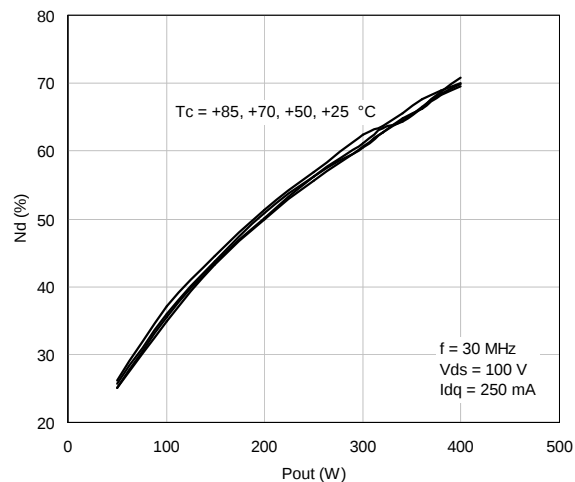


Drain Current Vs Drain Source Voltage



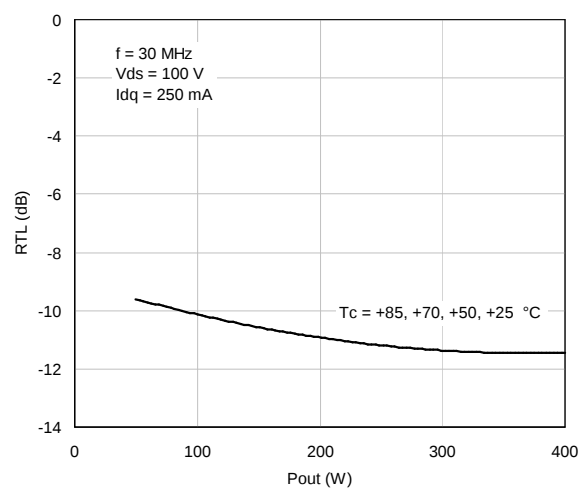
Gate Source Voltage Vs Case Temperature



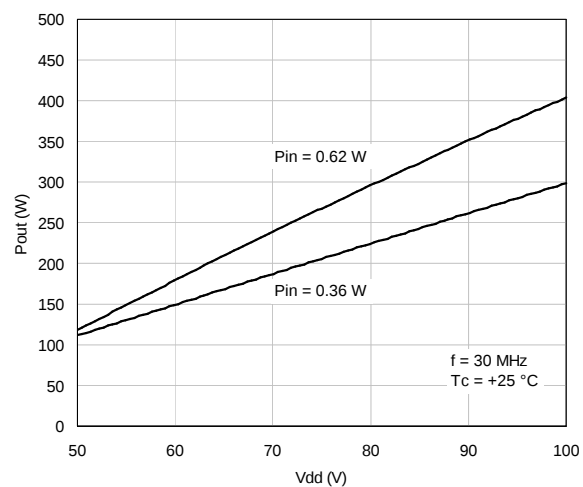
SD3933**TYPICAL PERFORMANCE****Output Power Vs Input Power****Output Power Vs Input Power****Power Gain Vs Output Power****Power Gain Vs Output Power****Efficiency Vs Output Power****Efficiency Vs Output Power**

TYPICAL PERFORMANCE

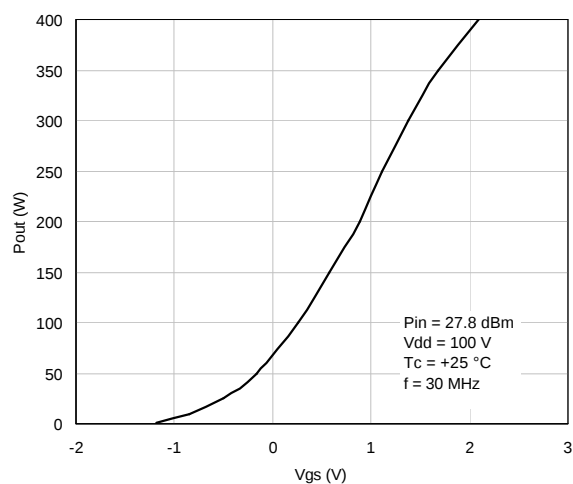
Input Return Loss Vs Output Power



Output Power Vs Supply Voltage



Output Power Vs Gate Source Voltage



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