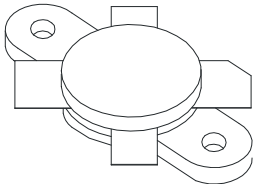
SD3933

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

PRELIMINARY DATA

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

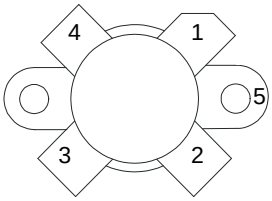


M177
epoxy sealed

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.

PIN CONNECTION



1. Drain
2. Source
3. Gate
4. Source
5. Source

ORDER CODES

Order Codes	Marking	Package	Packaging
SD3933	SD3933	M177	Plastic Tray

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25 °C)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain Source Voltage	250	V
V_{DGR}	Drain-Gate Voltage (R_{GS} = 1MΩ)	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	°C
T_{STG}	Storage Temperature	-65 to +150	°C

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	0.27	°C/W

ELECTRICAL SPECIFICATION (T_{CASE} = 25 °C)

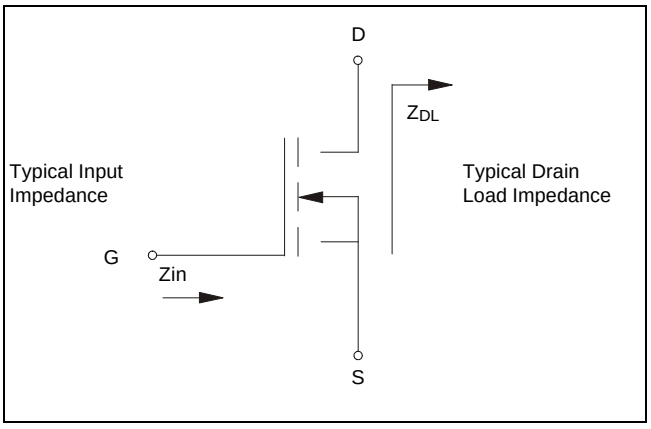
STATIC

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	V_{GS} = 0 V	I_{DS} = 100 mA		250			V
I_{DSS}	V_{GS} = 0 V	V_{DS} = 100 V				100	µA
I_{GSS}	V_{GS} = 20 V	V_{DS} = 0 V				500	nA
$V_{GS(Q)}$	V_{DS} = 10 V	I_D = 250 mA		1.5		4.0	V
$V_{DS(ON)}$	V_{GS} = 10 V	I_D = 10 A			2.75	5	V
G_{FS}	V_{DS} = 10 V	I_D = 5 A		6	8		mho
C_{ISS}	V_{GS} = 0 V	V_{DS} = 100 V	f = 1 MHz		1100		pF
C_{OSS}	V_{GS} = 0 V	V_{DS} = 100 V	f = 1 MHz		390		pF
C_{RSS}	V_{GS} = 0 V	V_{DS} = 100 V	f = 1 MHz		13		pF

DYNAMIC

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

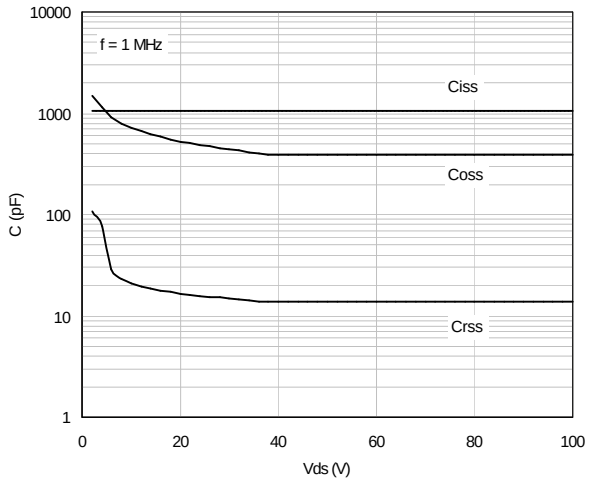
IMPEDANCE DATA



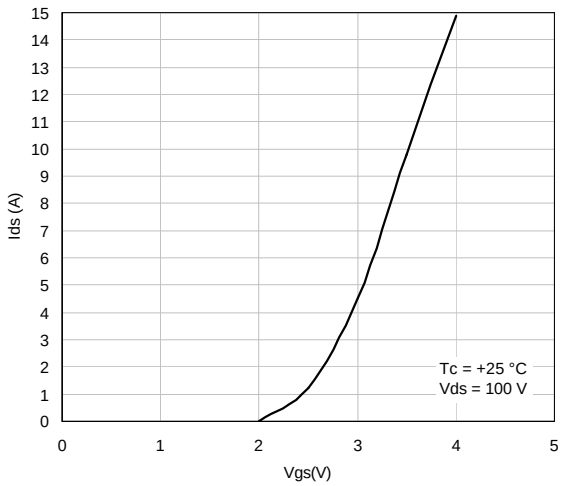
FREQ	Z_{IN} (Ω)	Z_{DL} (Ω)
30 MHz	2 - j 2.5	7 + j 7.5

TYPICAL PERFORMANCE

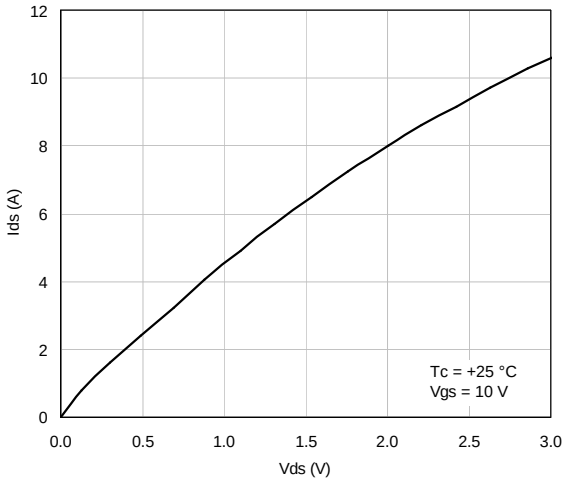
Capacitance Vs Drain Source Voltage



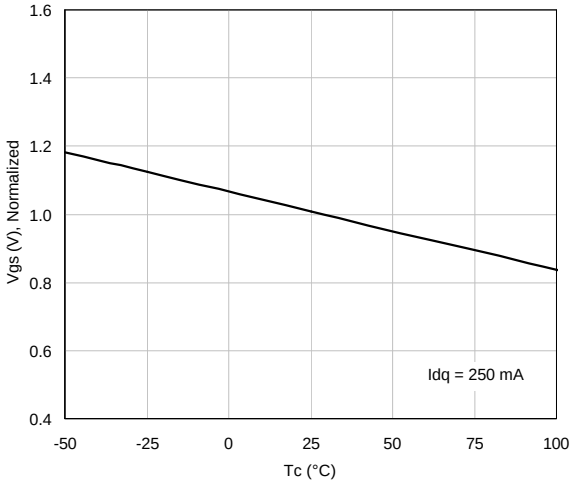
Drain Current Vs Gate Source Voltage



Drain Current Vs Drain Source Voltage

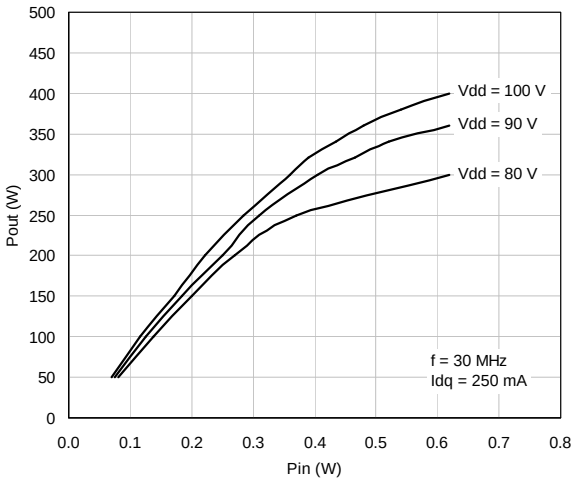


Gate Source Voltage Vs Case Temperature

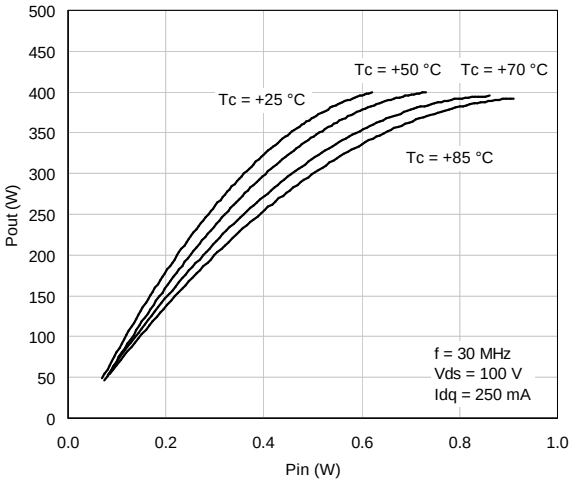


TYPICAL PERFORMANCE

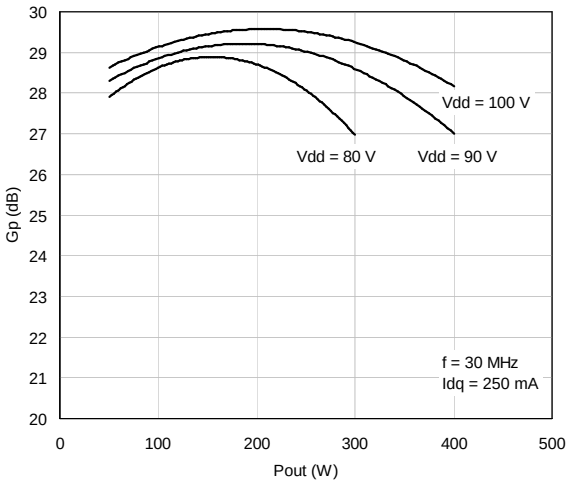
Output Power Vs Input Power



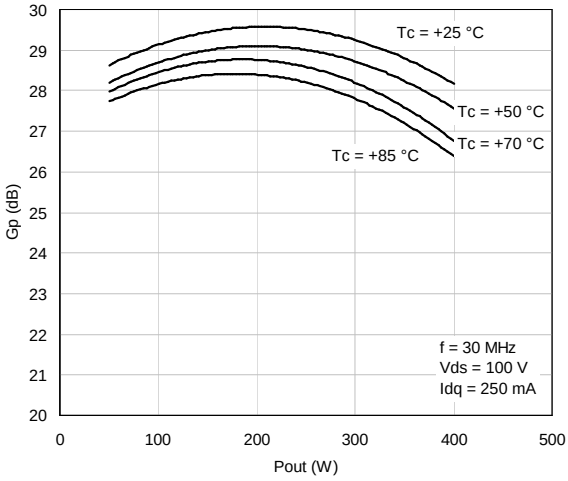
Output Power Vs Input Power



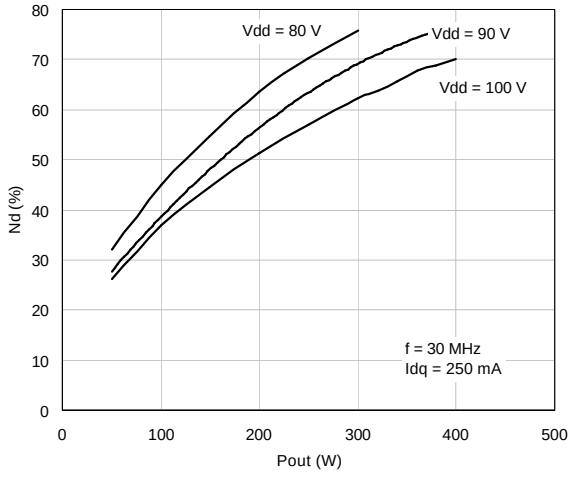
Power Gain Vs Output Power



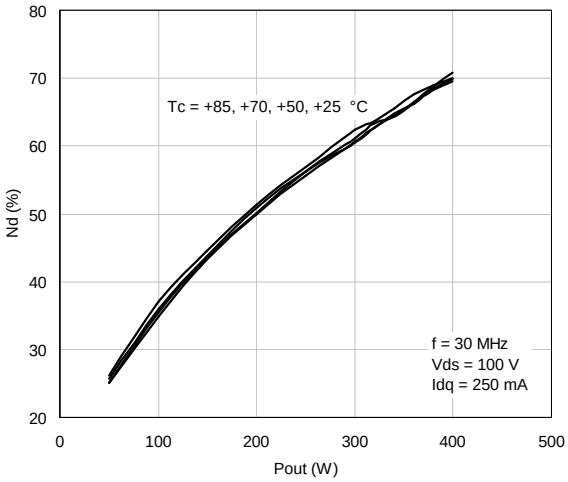
Power Gain Vs Output Power



Efficiency Vs Output Power

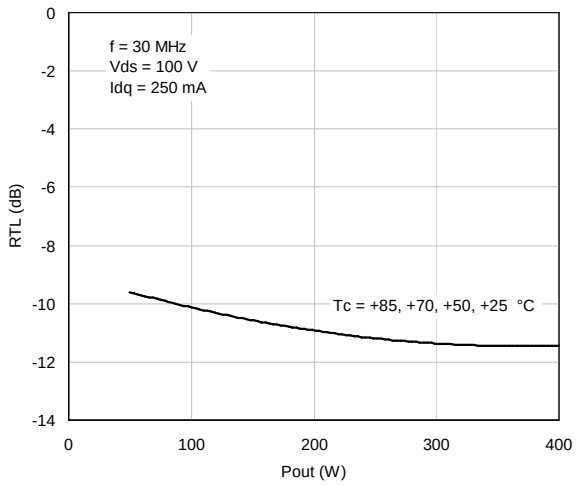


Efficinecy Vs Output Power

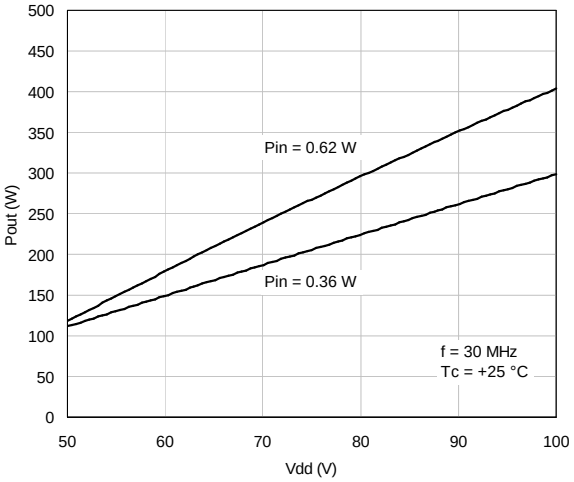


TYPICAL PERFORMANCE

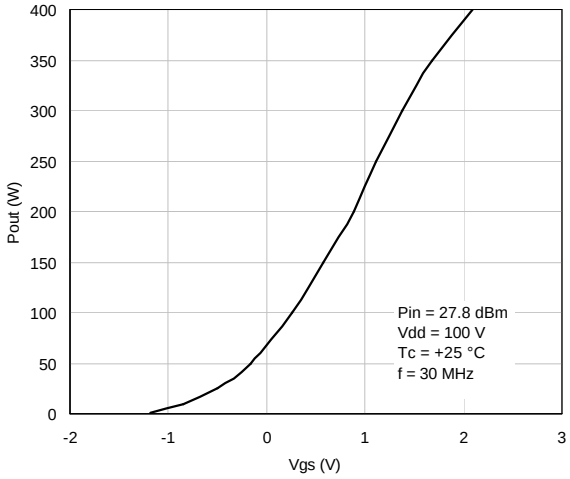
Input Return Loss Vs Output Power



Output Power Vs Supply Voltage

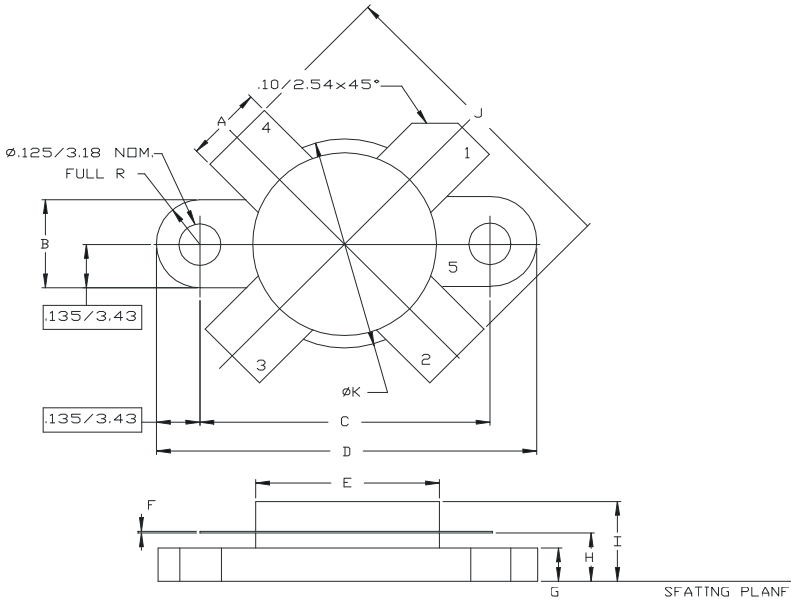


Output Power Vs Gate Source Voltage



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



Controlling Dimension: Inches

1011012D