



SD3931-10

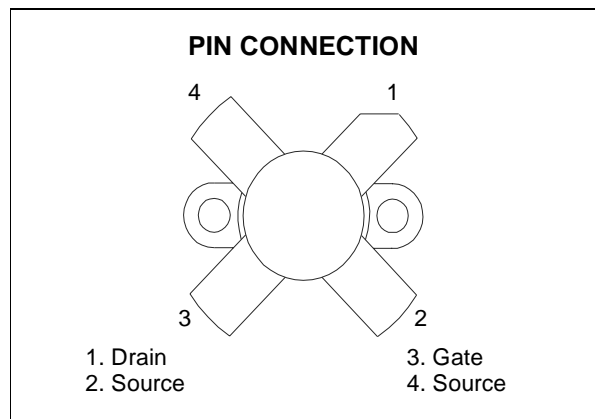
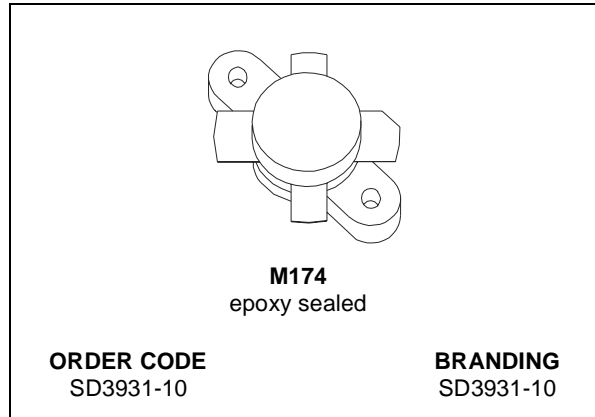
RF POWER TRANSISTORS HF/VHF/UHF N-CHANNEL MOSFETs

TARGET DATA

- GOLD METALLIZATION
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 150 \text{ W MIN. WITH } 21.7 \text{ dB GAIN @ } 150 \text{ MHz}$

DESCRIPTION

The SD3931-10 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 150 MHz.



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

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	10	A
P_{DISS}	Power Dissipation	437	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	0.4	$^{\circ}\text{C/W}$
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ELECTRICAL SPECIFICATION ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)

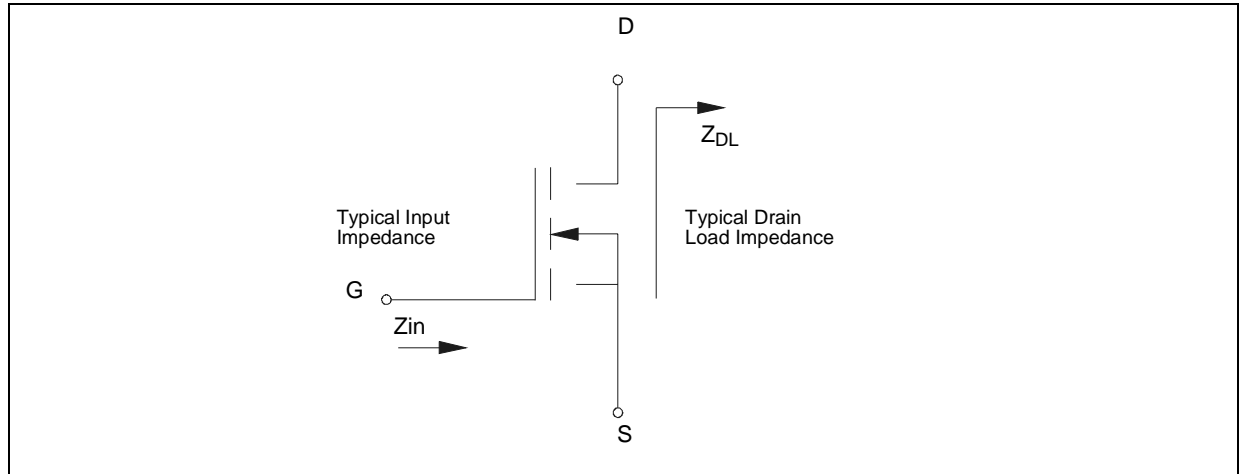
STATIC

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$	$I_{DS} = 100\text{ mA}$	250			V
I_{DSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$			5	mA
I_{GSS}	$V_{GS} = 20\text{ V}$	$V_{DS} = 0\text{ V}$			5	μA
$V_{GS(Q)}$	$V_{DS} = 10\text{ V}$	$I_D = 250\text{ mA}$	1.5		4.0	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$	$I_D = 5\text{ A}$			5	V
G_{FS}	$V_{DS} = 10\text{ V}$	$I_D = 2.5\text{ A}$	3			mho
C_{ISS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$		649		pF
C_{OSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$		134		pF
C_{RSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 100\text{ V}$		6		pF

DYNAMIC

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
P_{OUT}	$V_{DD} = 100\text{ V}$	$I_{DQ} = 0.2\text{ A}$ $f = 150\text{ MHz}$	150			W
G_{PS}	$V_{DD} = 100\text{ V}$	$I_{DQ} = 0.2\text{ A}$ $P_{OUT} = 150\text{ W}$ $f = 150\text{ MHz}$		21.7		dB
η_D	$V_{DD} = 100\text{ V}$	$I_{DQ} = 0.2\text{ A}$ $P_{OUT} = 150\text{ W}$ $f = 150\text{ MHz}$	TBD			%
Load Mismatch	$V_{DD} = 100\text{ V}$	$I_{DQ} = 0.2\text{ A}$ $P_{OUT} = 150\text{ W}$ $f = 150\text{ MHz}$ All Phase Angles	10:1			VSWR

IMPEDANCES SCHEME

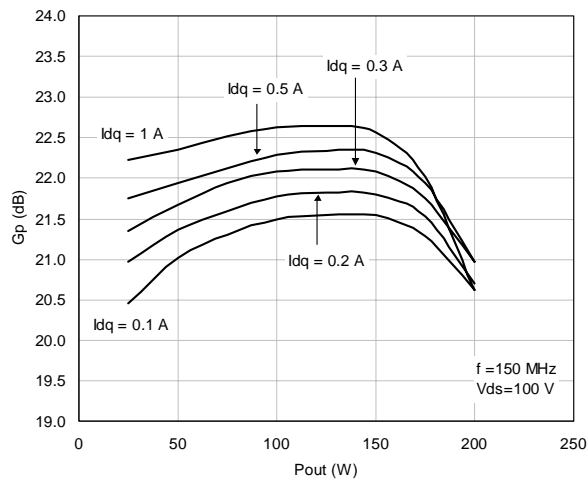


IMPEDANCE DATA

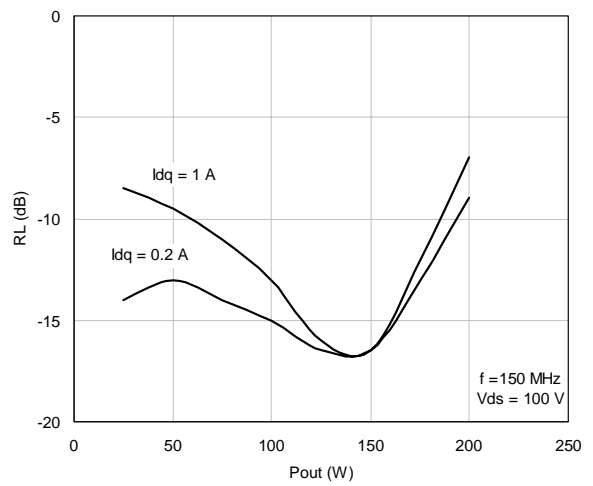
FREQ. MHz	$Z_{IN} (\Omega)$	$Z_{DL} (\Omega)$
150	$0.42 - j 3.1$	$3.4 + j 5.5$

TYPICAL PERFORMANCE

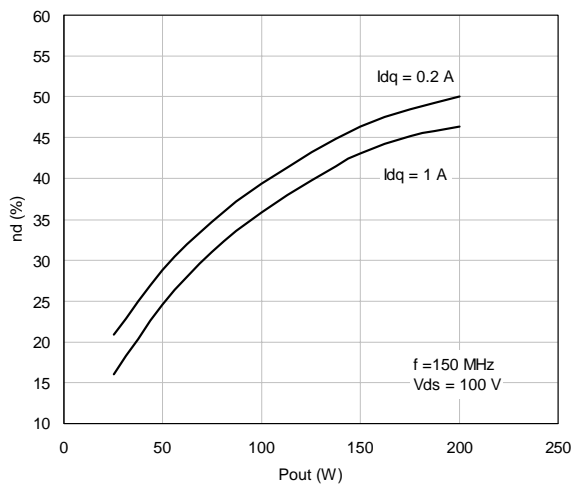
Power Gain Vs Output Power



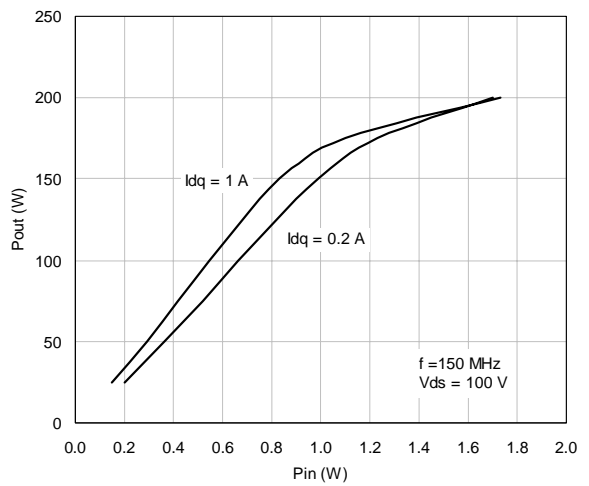
Input Return Loss Vs Output Power



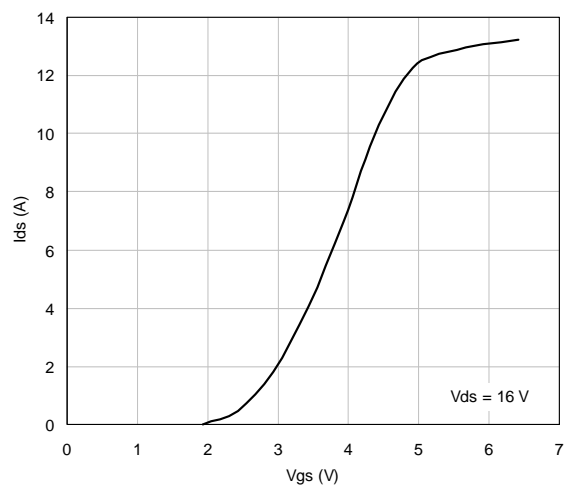
Efficiency Vs Output Power



Output Power Vs Input Power

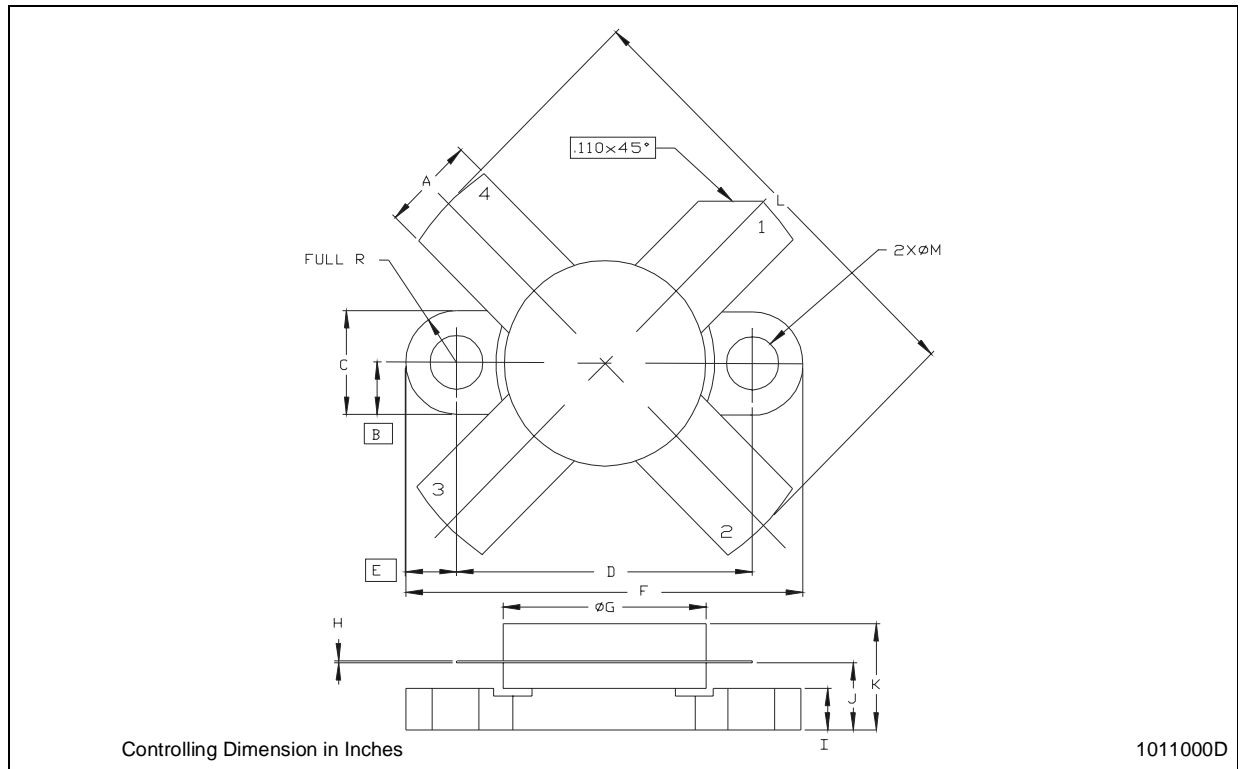


Drain Current Vs Gate-Source Voltage



M174 (.500 DIA 4/L N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	5.56		5.584	0.219		0.230
B		3.18			0.125	
C	6.22		6.48	0.245		0.255
D	18.28		18.54	0.720		0.730
E		3.18			0.125	
F	24.64		24.89	0.970		0.980
G	12.57		12.83	0.495		0.505
H	0.08		0.18	0.003		0.007
I	2.11		3.00	0.083		0.118
J	3.81		4.45	0.150		0.175
K			7.11			0.280
L	25.53		26.67	1.005		1.050
M	3.05		3.30	0.120		0.130



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